

**ASSESSING THEORY OF MIND, AFFECTIVE UNDERSTANDING AND  
REFLECTIVE FUNCTIONING IN PRIMARY SCHOOL-AGED CHILDREN**

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## **ABSTRACT**

The goal of this thesis was to address the problem of the paucity of measures for assessing the socio-cognitive abilities of primary school-aged children by presenting three such measures and their coding manuals, the Happé's Strange Stories (HSS), the Affect Task (AT) and the Child Reflective Functioning Scale (CRFS). The psychometric properties of the three measures were assessed to determine whether they can be used to obtain reliable and valid assessments of children's theory of mind, affective understanding and reflective functioning. The assessment of the psychometric properties of the measures was based on the performance of subsamples of 200 children aged 5 – 11 recruited from schools and referrals to outpatient Child and Adolescent Mental Health Clinics in London and surrounding areas, on the HSS, AT and CRFS. In addition to the measures of mentalisation, children completed the Child Depression Inventory, the State and Trait Anxiety Scale, Harter's scale of self-esteem, and the Child Attachment Interview. Parents completed the Child Behaviour Checklist and the Child Adaptive Functioning Scale.

The findings indicate that: 1) the interrater reliability, internal consistency and test-retest reliability of the measures were generally robust; 2) on the whole, children's socio-cognitive abilities, as measured on all the tasks, showed significant positive correlations of moderate strength with intelligence and expressive language abilities; 3) children with siblings showed significantly better performance on the AT Justification Scale, but contrary to expectations, children living in single parent families performed significantly better on the HSS and CRFS; 4) children's socio-cognitive abilities were implicated in depression, anxiety and adaptive functioning; 5) socio-cognitive abilities in general were associated with attachment security; 6) reflective functioning appears to have a complex relationship with affective and behavioural difficulties, and children with exceptionally low or high reflective functioning appear more likely to have affective and behavioural difficulties.

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opportunity to think, speak and be heard, when it seemed that you gave so much more to me than I gave in return. This thesis is dedicated to you.

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## INTRODUCTION

The importance of children's capacity to mentalise, including the capacity to consider the thoughts, feelings and intentions of others, as well as their own, in everyday interactions, and especially in close relationships, is increasingly recognised. The development of children's capacity to mentalise, also referred to as socio-cognitive abilities, or mind-mindedness, has become the central focus for researchers from a theory of mind perspective, as well as for researchers focusing on the development of affective understanding, and more recently for researchers using the new reflective functioning perspective. These researchers strongly suspect that these abilities are linked to social- and interpersonal functioning, as well as to self- and emotional regulation and to psychopathology. At the same time, it remains to be seen whether empirical evidence will be in line with this theoretical expectation. At this stage, the lack of reliable measures of more complex mentalisation has become a major obstacle to further research, and to date there have been relatively few attempts to develop standardised child measures which go beyond the assessment of symptomatology, behaviour and adaptation, to measuring the development of mentalisation. Without such measures, we are not able to test theories of the development of mentalisation during childhood, or derive empirically tested theories of the developmental relationship between children's socio-cognitive, behavioural and adaptational difficulties. The period of middle childhood in particular seems to have suffered from a lack of empirical research regarding the developmental changes in theory of mind and mentalisation, including representations and understanding of self, others, and relationships. This also has implications for child psychotherapy outcome studies, in that researchers have had to rely largely on measures of symptomatology and behaviour, even when the therapeutic aim was to produce internal changes in mentalisation. This situation also has potentially serious consequences when we consider that some types of therapies may be prematurely rejected by the scientific community, because of a lack of sufficiently nuanced measures.

With a few exceptions such as Harter's work (1999) on self-esteem from a cognitive psychological perspective and the recently developed Child Attachment Interview developed by Target and collaborators (Target, Fonagy, Shmueli-Goetz, Schneider & Datta, 2000), work on other measures of mentalisation is still in progress, and there is an absence of published data on the psychometric properties of other



measures.

Theory of mind researchers have drawn attention to a wealth of empirical evidence confirming the often startling abilities of very young children to consider the minds of others, but they have also largely neglected the primary school years, and the majority of theory of mind tests have proven insufficiently complex to do justice to the range of abilities and deficits that need to be studied in this age group. The sheer complexity and diversification of abilities from the time children start school to adulthood have undoubtedly contributed to the impasse theory of mind researchers have reached in the assessment of older children, as well as in identifying theory of mind deficits associated with depression, behavioural difficulties, disturbances of personality and affect regulation.

In this context, research findings using the new paradigm of reflective functioning, developed by Fonagy and Target in collaboration with their colleagues (George Moran, Miriam and Howard Steele, Anna Higgitt, Gyorgy Gergely, Efrain Bleiberg and Elliot Jurist), are promising and the model has been shown to have the necessary complexity and sensitivity for identifying the difficulties in mentalising associated with adult psychopathology. The questions raised are now; 1) whether it is possible to adapt reflective functioning assessments for use with primary school-aged children; 2) whether it is possible to demonstrate that these measures can be reliably coded and are stable over time; 3) whether reflective functioning provides any additional information when compared with more basic tests of theory of mind; and 4) how performance on measures of theory of mind, emotional understanding and reflective functioning relates to age, IQ, attachment, adaptation and psychopathology.

The aim of this study is to address this problem by developing psychometrically robust measures of mentalisation for use with primary school-aged children. The reliability and validity data of three measures of mentalisation will be presented: 1) the Happé Strange Stories (HSS: Happé, 1994), a theory of mind measure designed to assess the capacity to consider intentions rather than purely literal meaning in communication; 2) the Affect Task (AT: Fonagy, Target, M. Steele, H. Steele, Charman, et al., 2000), a test of the complexity, depth and interpersonal dimensions of affective understanding using a reflective functioning perspective; and 3) the Child Reflective Functioning Scale (CRFS: Target, Oandasan, & Ensink, 2001), adapted from the Adult Reflective Functioning Scale and designed for use with interview data obtained using the Child Attachment Interview (CAI: Target et al., 2000). A large part of the work that will be presented here involved the development of reliable coding systems for all three

measures, with the aim of developing and standardising a battery of child psychotherapy outcome measures. The links between mentalisation and performance on measures of psychopathology and adaptation will also be investigated, as well as the overlap and differences between theory of mind, affective understanding, and reflective functioning.

### **Different Approaches to Mentalisation**

In looking back over the last 100 years, it is possible to discern a growing interest in the capacities of humans and perhaps some of our close animal relatives, to consider the minds and intentions of others. As Whiten (1994) points out, this interest arose from diverse perspectives; thus the different terms used may involve incompatible conceptualisations of mind or may refer to very different levels of penetration into the minds of others (see Table 1).

In recent years, researchers and theorists using the theory of mind paradigm have made significant contributions to our knowledge of how children develop an awareness and understanding of the intentions of others, as well as their abilities to think about their own minds, and those of others. At the same time, psychoanalysts, cognitive psychologists, attachment researchers, and other developmentalists have developed theoretical and empirically based models and tools for thinking about the development of mentalisation about self and others, and its relationship to the organisation of the self and relationships. Regarding terminology, when referring to these abilities, *mentalisation* is the term used by theory of mind researchers such as Morton (1989), and this term is also used within the psychoanalytic tradition. Other developmentalists refer to these abilities as socio-cognitive and socio-emotional abilities, because they see them as the cognitive aspect of social or emotional skills. They may thus use terms like social understanding (Dunn, 1988), emotional understanding (Denham, 1998), social intelligence (Thorndike, 1920) or emotional intelligence (Goleman, 1995; Mayer & Salovey, 1993).

There are significant commonalities between attachment researchers, psychoanalytic theories of the development of mentalisation and self and early developmentalists who stress the importance of the mother-infant interaction in the way that the self and relationship patterns become organised. More recently, Fonagy, Target and co-workers introduced the reflective functioning model (Fonagy, H. Steele, Moran, M. Steele, & Higgitt, 1991; Fonagy et al., 1992; Fonagy, Target, H. Steele, & M. Steele, 1998). In their model of reflective functioning, they reconceptualise the attachment model through the integration of selected concepts and findings from the theory of mind model, mother-infant developmental research and psychoanalytic theory.

Table 1

*Different Terms used for Mentalisation (adapted from Whiten, 1994)*

Terms	Authors
Linking and mental mechanisms	(Freud, 1911, 1933)
Consciousness of the feelings of their fellows, social intelligence	(Thorndike, 1911, 1920)
Folk psychology	(Wundt, 1916)
Depressive position	(Klein, 1935, 1940)
Phantasy	(Isaacs, 1991)
Naive psychology	(Heider, 1958)
Alpha function	(Bion, 1962a, 1962b)
Second-order intentionality	(Dennet, 1971)
Intersubjectivity	(Trevarthen, 1979, 1980, 1998)
Theory of mind	(Premack & Woodruff, 1978)
Metarepresentation	(Pylyshyn, 1978)
Belief-desire reasoning	(Davidson, 1980)
Mindreading	(Krebs & Dawkins, 1984; Baron-Cohen, 1994)
Mentalising	(Morton, 1989)
Perception of intentionality	(Dasser, Ulbaek, & Premack, 1989)
Social-referencing	(Feinman, 1991)
Mentalistic theory of behaviour	(Perner, 1991a)
Representational theory of mind	(Perner, 1991b)
Mind-mindedness	(Meins et al., 1998)
Emotional intelligence	(Mayer & Salovey, 1993; Goleman, 1995)
Reflective functioning	(Fonagy et al., 1998)

## **Affect and Cognition:**

### **Developmental Questions and Insights from Neuroscience**

The relationship between affects and reason has preoccupied philosophers and psychologists. Affect and reason are generally seen either as essentially opposed to each other or as integrated. In the field of psychology, the former view is represented by theory of mind (Tomkins, 1981) who stresses that affects are expressed through facial expressions and function as a primary biological motivating mechanism, and also his student, Ekman et al. (1972), who proposes that the five basic emotions of happiness, sadness, anger, fear and disgust occur universally and cross-culturally. Others like Lazarus (1984) have argued that cognition is an essential component in affective experience, but this notion is rejected by other psychologists like Zajonc (1984) who have argued that it is possible to have affects without cognitions.

In Chapters 1 and 2 the dominant paradigms presently used in empirical research and theory to understand children's developing capacities to mentalise will be introduced. More specifically, the theory of mind approach will be introduced in Chapter 1. In Chapter 2 the focus will be on the current research findings regarding the development of affective understanding, as well as attachment theory and research. The relatively new reflective functioning model will then be presented. In Chapter 3 the question of the assessment of cognitive emotional abilities or emotional intelligence will be addressed, and the approach used to evaluate the three measures that will be used in this thesis, will be presented.

## **CHAPTER 1**

### **ASSESSING THEORY OF MIND IN PRIMARY SCHOOL CHILDREN: THEORETICAL CONTEXT AND EMPIRICAL FINDINGS**

One of the most important achievements of modern developmental psychology has been to draw attention to the universal and astonishing capacities of young children to mind-read: it appears incontrovertible that by four years of age, children interpret behaviour in terms of the agent's mental states. In John Morton's chilling phrase, they "*mentalise*": they convert behaviour they see others perform, or that they themselves perform, into actions driven by beliefs, desires, intentions, hopes, knowledge, imagination, pretence, deceit, and so on. Behaviour is instantly, even automatically, converted into what the agent may be thinking, planning or wanting. (Baron-Cohen & Swettenham, 1996, p. 158)

#### **Theoretical and Historical Background**

During the past 15 years, cognitive developmental psychologists focusing on the development of theory of mind have provided us with startling evidence of the abilities of very young children to understand their own behaviour, as well as that of others, based on beliefs and desires. Furthermore they have also presented fascinating observations and experiments suggesting that from early infancy we attribute intentionality to people. The term theory of mind has come to designate a specific domain of inquiry and research for philosophers, cognitive developmentalists and primatologists, with the broad goal of understanding the ability, which may or not be exclusively human, to predict and explain the actions of self and others based on their knowledge, beliefs and desires.

### ***Philosophy of Mind and Theory of Mind***

Philosophy of mind has to a large extent informed the terms of reference, the terminology, the priority issues and major debates of theory of mind research. Following the collapse of behaviourism in the 1960's, the philosopher, D. Lewis (1966) introduced the notion that our access to the minds of other people (and also to our own mental states) is mediated by an implicitly held theory of the functioning of the human mind. Interest in the developmental acquisition of theory of mind abilities developed much later in the 1980's with the re-emergence of the Rationalist and Empiricist debate and competing theories of folk-psychological abilities as innate or learned. The philosopher Fodor (1992) has been one of the most influential proponents of the theory that theory of mind abilities are innate and develop through a process of maturation rather than through learning. Subsequently the introduction of Simulationist accounts of the development of our mind reading abilities by philosophers such as Gordon (1992a) posed an additional challenge to the orthodox theory-theory account, stimulating further interest in developmental research.

The philosophical proposal that intentionality or "aboutness" is a defining feature of mental phenomena, first introduced by Brentano (1924), has also come to be a central concern for theory of mind researchers. The central postulate is that mental attitudes, such as beliefs and desires, are "about" some state of affairs. Based on these ideas, Dennett (1987) proposed the notion of the "intentional stance", that is, that we assume that people's behaviour can usually be explained and predicted by reference to their beliefs and desires. He provides the following description of the strategy used in the intentional stance, "...first you decide to treat the object whose behaviour is to be predicted as a rational agent, then you figure out what beliefs that agent ought to have, given its place in the world and purpose, then you figure out what desires it ought to have, on the same considerations, and finally you predict that this rational agent will act to further its goals in the light of its beliefs" (p. 17).

The introduction of these ideas around intentionality from philosophy of mind into developmental psychology has contributed to the unique character and appeal of theory of mind. It has stimulated a substantial body of research on the early emergence and development of intentionality in infants, and it is intriguing and productive to think of the development of children's mentalising, as well as the intergenerational transmission of mentalising abilities in these terms (Fonagy, H. Steele, & M. Steele, 1991; Fonagy, M. Steele, Moran, H. Steele, & Higgitt, 1992). On the other hand, it has also contributed to a state of affairs in which the child is treated more as a philosopher and a philosophical

construct than as a child who develops mentalisation capacities in the context of affective relationships within the family.

### ***Historical Roots of Theory of Mind within Developmental Psychology***

The preoccupation with the development of children's abilities to understand that other people have a psychological and not just a physical existence, and with children's discovery that one mind can interface with another through intentional signals, can be traced back to the very early developmentalists such as Baldwin (1906). Piaget's reworking of Baldwin's theories (Piaget, 1967/1972), and his work on thinking, egocentrism, empathy and role taking, made a substantial contribution to understanding the development of children's theory of mind (Bretherton, 1991). He suggested that a developmental shift takes place at age 7 or 8 when children become capable of distinguishing thoughts from reality, and also capable of decentring and taking the perspective of others into account.

With the rise of behaviourism under J. B. Watson (1930), a barren period followed in which there was little interest in the development of children's mentalising abilities. In the 1960's and 1970's, the cognitive revolution was associated with renewed interest in children's social cognition in the application of Piaget's ideas on cognition to the arena of social phenomena (Chandler, 1982). Interest in how children come to participate in and understand the social world was reflected in research topics such as person perception, perspective taking, the ability to infer another person's thoughts, feelings, perceptions and intentions, psychological causality, as well as moral judgement. This interest broadened to examining the importance in social interactions for social cognitive development, and the relationship of social behaviour and peer relationships to social cognitive development, and the development of self-concept (Lamb & Sherrod, 1981).

### ***Theory of Mind Pioneers***

It was Premack and Woodruff's classic paper (1978) speculating on whether chimpanzees could have a theory of mind that provoked the exciting debates and drew attention to the development of theory of mind. They claimed that there was evidence suggesting that chimpanzees had an understanding of some of the mental states of the human actors in the laboratory. This stimulated philosophers and psychologists to think about what it means to possess a theory of mind of another creature, and what could be regarded as evidence of theory of mind. This undertaking initially proved surprisingly difficult and it was only after Wimmer and Perner (1983) provided a clear experimental

paradigm with the invention of the now famous false-belief task that theory of mind research took off.

The false-belief task focuses on a character, Maxi, who helps his mother unpack the groceries and leaves a bar of chocolate at a specific place with the idea that he will come back later and eat it, but while he is out of the room his mother puts the chocolate somewhere else. At this point, children are asked to imagine where Maxi will look for his chocolate when he re-enters the room. Given that the child knows where Maxi's mother put the chocolate, the task requires the child to inhibit his own knowledge about the real whereabouts of the chocolate and think about what Maxi would think based on what he knows, and thus to realise that Maxi has a false-belief. Perner (1991b) considers this to be indicative of a representational theory of mind. The fact that children passed this task between the ages of 4 and 5, created somewhat of a stir in the world of developmental psychology, given that it now seemed that theory of mind abilities emerged 2 or 3 years earlier than would be expected based on Piaget's theories.

Attention subsequently shifted to looking at earlier manifestations of theory of mind abilities such as the understanding of desire (Perner, 1991a; Wellman & Woolley, 1990), pretend play (Dunn, 1988; Lillard, 1993), the emergence of emotional understanding in the family context (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991) and the role of language in theory of mind development. At the same time, others such as Premack (1990), and Astington and Gopnik (1991) were attempting to define and delineate the development of intention and the understanding of intentionality, considered a cornerstone of theory of mind (Dennett, 1987; Frye, 1991; Perner, 1991a; Wellman, 1993). Subsequently, researchers such as Bretherton (1991), Frye (1991) and Premack (1990) asked questions about the origins of theory of mind and intentional understanding in infancy. It is these investigations that led theory of mind researchers to integrate findings from infant communication studies and intersubjective theories of development (Bretherton, 1991), and also to consider also the implications of results coming from social attribution studies (Premack, 1990). More recently, interest has shifted to understanding the relationship between theory of mind, executive function (Perner & Lang, 2000), and social affective competence, as well as to understanding the neurological and developmental relationship between cognition and affect (Klin, Schultz, & Cohen, 2000).

### ***Different Theoretical Positions***

A number of competing theoretical accounts of the development and nature of



theory of mind have been proposed. These include theory-theory accounts, simulation accounts and nativistic accounts, with many accounts adopting some aspects of these three theories, but with different emphases. Furthermore, accounts from somewhat different theoretical perspectives, such as intersubjective and social-functionalist accounts, have also been very influential. More recently, the emphasis has shifted away from the experimental testing of theories, to an empirically driven approach based on the use of fMRI studies.

These different theoretical accounts will be briefly summarised.

### ***Theory-Theory Account***

Premack and Woodruff's initial view (1978) that it is a theory that the child develops, now represents the most widely accepted perspective on the process of the development of a theory of mind (Astington & Gopnik, 1991). The growth and elaboration of the child's theory of mind is seen as the result of "theory building" as the child reviews and reorganises his or her existing theory in order to account for new "evidence" in the environment. Accordingly, Astington and Gopnik state that, "the mechanism of development [...] is internal to the theory-formation process itself [...] and driven by both internal factors, such as a "drive for simplicity", and external factors, such as accumulating evidence" (p. 40). This process of theory formation and testing is seen as underlying the development of children's understanding of the mind.

From this perspective, developmental changes are seen as reflecting major theoretical shifts and reorganisations affecting many different areas simultaneously. The emergence in infants of a symbolic capacity at 18 months of age is regarded as an example of such a shift, as is the development of false-belief understanding around the age of 4. According to Astington and Gopnik (1991), the theory-theory position is corroborated by both the findings that success on false-belief tasks coincides with the recognition of false-belief in oneself and the recognition of the distinction between appearance and reality. This view is also in line with research findings that the child's current theory is initially quite "resistant to evidence" and that counterfactual evidence does not lead straight away lead to the transformation of the theory, but requires multiple occurrences.

Gopnik and Astington (1988) are both learning theorists, but while Gopnik (1996) maintains a child as scientist account of the acquisition of theory of mind, Astington and Jenkins (1995) argue that what children learn is not a theory but rather cultural explanations and social roles, in short, the folk psychology of their particular culture. Astington (1994), in the Vygotskian tradition, develops the position of Bruner (1990) that

children learn to give meaning to what people do in the process of acquiring the ability to construct narratives about themselves and others. She considers that children come to regard themselves as intentional beings and begin to communicate intentionally because their spontaneous gestures are treated as if they are intentional by their parents. In the same way, children learn from their parents to attribute mental states to themselves and to others, and that others also have similar emotions and thoughts.

Gopnik (1996) argues that children, like scientists, make and review theories based on available evidence. Like modular theorists, Gopnik and her co-workers (Gopnik, Capps, & Meltzoff, 2000) consider the theory formation mechanisms to be innate and designed to construct revisable causal maps of the world, but they reject the notion that the subsequent acquisition of theory of mind is determined primarily by maturational processes. This group of investigators attribute rich cognitive structures to infants (Gopnik et al., 2000), and propose that, in addition to the theory formation mechanism, infants possess certain innate theories (or something very much like a theory), including an initial starting state theory of the movement of objects, as well as a theory of people and actions (Astington & Gopnik, 1991; Gopnik & Meltzoff, 1997). This allows them to make predictions, and is the foundation of later theory of mind development.

Like the intersubjectivists, Gopnik et al. (2000) propose that babies are born assuming an important link between themselves and others, that their own internal feelings and those of others can be represented in the same way, and that there is a link between their own feelings and the actions of others. They consider Meltzoff and Gopnik's (1993) findings that babies show an interest in imitating a range of facial gestures, as evidence that babies have an ability to map their own facial sensations onto the visual display of, for example, someone sticking out their tongue. In this way these representations are thought to be linked, and this process is argued to also be present in other very early social behaviour, or primary intersubjectivity, as described by Brazelton (1982), by Trevarthen (1979, 1980) and by Tronick and Cohn (1989). In addition, Gopnik et al. conclude that there is a link between the capacity of infants to imitate facial expressions, and both the development of empathy and theory of mind.

### ***Simulation Theory***

Like Goldman (1992) and Gordon (1992a), Harris and collaborators (Harris, Johnson, Hutton, Andrews, & Cooke, 1989) argue that the "theory metaphor" provides a seriously misleading characterisation of children's developing abilities to understand other minds. The simulationist position is that humans are able to understand others, not

by applying concepts and theories, but through the process of imaginative identification with another person's perspective (Carruthers & Smith, 1996). The argument is that we are intuitively aware of our own mental states and that we all have in common mental states such as beliefs, desires, and emotions. It follows that we can simulate another person's experience, actions and reactions through a process of identification (Harris et al., 1989), a process which does not require us to have either implicit or explicit theories of mind. Simulation accounts differ somewhat with regard to whether this process requires conscious awareness of the first-person states which are extrapolated to the other person, or whether the process of imaginative identification could, in fact, take place without conscious awareness (Gordon, 1992a) so that it would not be accessible to inquiry.

Wellman and Bartsch (1989) have reviewed theory-theory accounts and simulationist accounts on the basis of data from experimental studies and developmental observational research in naturalistic settings. Their findings confirm that 2-year-old children can report their own mental states; however, this is initially limited to the reporting of desires, and there is no evidence that they report beliefs or thoughts. This is contrary to what we would expect from a simulationist perspective; it is more compatible with the theory-theory account that young children have to develop a sense of representational nature of mental states. It would seem that such mental states require more than just experiencing and reporting them, and that young children first have to first develop a conceptual understanding of such states within a broader naive psychological framework. Wellman and Bartsch stress that they do not deny the importance of children's experience of mental states in their developing understanding of mind. They argue rather that the evidence supports a characterisation of an early desire-based theory, broadening to a later belief-desire theory.

### ***Theory of Nativism***

Proponents of the theory of nativism maintain that innate mechanisms in the brain mediate "theory of mind". The maturation of these mechanisms are seen as underlying the growth and limitations of children's understanding of their own and other minds. Nativists such as Baron-Cohen, Leslie and U. Frith (1985), Leslie (1987), as well as U. Frith, Happé and Siddons (1994) have formulated their ideas through the study of autism. Their research points to neurologically based deficits, and has arguably contributed to the conclusion that an innate neurological "theory of mind" substrate is responsible for the emergence of theory of mind capacities.

Leslie (1986) proposes that already at 3 or 4 months an infant's theory of body

mechanism (ToBy) comes into play, processing information about objects based on their mechanical properties and leading to the distinction between agents and non-agents. He considers that the first theory of mind mechanism comes into being shortly afterwards, and that at roughly 6 to 8 months of age infants become capable of processing information about agents and their goal directed actions. This is seen as paving the way for engagement in interactive events such as joint attention, and social referencing, with the second theory of mind mechanism maturing at between 18 and 24 months. This module is regarded as enabling the child to produce metarepresentations.

Baron-Cohen and Swettenham (1996) argue for the existence of an innate mindreading system, or social brain, that has evolved specifically to enable the attribution of mental states to agents. They consider that from the outset, when children are developing an understanding of the mind, the eyes and surrounding areas are of particular importance.

Baron-Cohen, Wheelwright, Hill, Raste, and Plumb (2001) have put forward the argument that there are two evolutionary determined specialised neurocognitive mechanisms that have evolved to interpret the movement of agents and objects. Following Dennett (1987), they argue that humans, from infancy on, use folk (or intuitive) psychology to deduce the cause of an agent's actions, and that they use folk (or intuitive) physics to deduce the cause of a non-agent's movement. In their most recent paper, Baron-Cohen et al. (2001) differentiate between two levels of theory of mind abilities. The first level is designated as "low-level skills" that are present from infancy and include the ability to: 1) identify agents (Premack, 1990); 2) determine whether an agent is looking at you (Baron-Cohen, 1994); 3) determine if the agent is expressing a basic emotion, as well as the type of emotion (Ekman, Friesen, & Ellsworth, 1972); 4) demonstrate shared attentional skills such as following gaze and pointing gestures (Tomasello, 1995); 5) express concern or basic empathy when another person is distressed and respond appropriately to other emotional states (Saarni, 1999); and 6) being able to identify another's basic goals and intentions (Premack, 1990). The second level is designated as "higher level social intelligence" and includes: 1) being able to attribute a range of mental states to oneself and others, such as pretence, deception and belief (Leslie & Keeble, 1987); 2) being able to recognise and respond appropriately to a range of more complex emotions (Cook, Greenberg, & Kusche, 1994); 3) being able to link mind-reading to action and language (Tager-Flusberg, 2000); 4) being able to use mindreading to predict and even manipulate the behaviour of others (Whiten, 1991); 5) knowing what is appropriate in different social contexts and what others will think of our

behaviour; and 6) empathic understanding of other minds in social relationships and communication.

### ***Social Functionalist Perspective***

Dunn (1993, 1994) has greatly contributed to our present understanding of the development of children's mentalisation. She has contributed many chapters to books on theory of mind development and is frequently quoted by theory of mind theorists; nonetheless, she is more of a social cognitivist and would probably not identify herself as a theory of mind theorist. The explanation for this is that Dunn and her colleagues (Dunn, Brown, Slomkowski, et al., 1991; Dunn & Brown, 1993) have collected fascinating longitudinal evidence of children's developing social abilities manifested in everyday close relationships with parents and siblings. Evidence from these and other studies by Dunn and colleagues (Deater-Deckard, Dunn, O'Connor, Davies, & Golding, 2001; Dunn, 2000, 2002; Dunn, Cutting, & Demetriou, 2000) have provided invaluable data indicating that, in the context of their close relationships, children show an interest in, and understanding of, the connections between inner states and behaviour much earlier than experimental work with false-belief tasks would lead us to expect. Her work has also drawn attention to individual differences in the development of understanding other minds, and suggests that the quality of family relationships, including the extent to which parents use mental state words, may contribute to these differences.

### ***Intersubjectivity***

Whiten (1994) points out that the notion of intersubjectivity is a term borrowed from philosophy of mind and applied to parent-infant interaction. Intersubjective theories are based on studies of the micro-structure of the vocalisations, gestures and facial expressions observed when infants and parents interact. These theorists conclude that what is observed can best be described as a meeting of minds or, literally, the sharing of subjective states. Trevarthen (1979) defines intersubjectivity as the mutual adjustments of conscious voluntary agents (subjects) to one another's mental states. He suggests that a primitive intersubjectivity exists from birth, (Trevarthen, 1980).

While intersubjectivity did not initially appear in the indexes of the principal theory of mind monographs (Harris et al., 1989; Perner, 1991a; Wellman, 1990), this situation changed when interest turned to the origins of intentionality in infancy. At this point Bretherton (1990) began contributing to key theory of mind texts, and introduced the term "theory of mind" in her studies analysing the communicative abilities of infants. Bretherton and her co-workers (Bretherton, McNew, & Beeghley-Smith, 1981) as well as Stern (1985) interpret the data as showing that from very early on infants take an active

stance in initiating and terminating social engagements with their caregivers. Examples include early facial imitation (Meltzoff & Moore, 1977) and turn taking (Stern, 1985). Bretherton (1991) introduced the notion that with infants of 2 to 8 months, the caregiver's "rich interpretations" of the infant's social behaviour as meaningful are crucial and create an intersubjective domain that eventually leads the infant to behave socially in an intentional manner.

Like Trevarthen (1979), Bretherton (1991) uses the term secondary intersubjectivity to refer to the capacity that develops at around 9 months to consider intentional interactions involving shared topics or objects. According to her, secondary intersubjectivity marks the emerging ability to understand others as psychological beings and reveals a rudimentary (experienced, nonreflective) theory of mind. Bretherton refers to a large body of research evidence suggesting that infants are capable of intentional communication; this research evidence forms the basis of her theory. It will be presented in more detail in the subsequent section in which the focus will be on the developmental determinants of theory of mind in infancy. Experimental and observation evidence of the ways infants use gaze direction, repair failed communication bids and use the affective expression of their parents in ambiguous situations (Bretherton, 1991), will also be considered.

### *New Contributions from fMRI Studies*

C. Frith and U. Frith (2000), on the basis of their own extensive research and a review of research to date, conclude that the existing evidence points to the involvement of the medial frontal cortex and the temporo-parietal junction in studies where volunteers have to make inferences about the mental states of others.

These studies also indicate that the medial frontal cortex is involved in monitoring our own thoughts, actions and feelings. A PET study involving mental state attribution and in which volunteers read Happé's Strange Stories (Happé, 1994) showed activation of the medial frontal cortex, in particular Brodman's area 8 and the adjacent area 9 (Esteves et al., 1994). A similar pattern was observed in a fMRI study using cartoons and in which the mental states had to be taken into account, as well as what another person would know; this study also points to the involvement of Brodman's area 8 in mentalisation (Goel et al., 1995). There is evidence that the temporo-parietal region is also activated when interpreting biological motion (C. Frith & U. Frith, 2000), but not mechanical motion. This could be seen as broadly supporting both the large body of work on the early development of intentionality detection abilities in infants and also the theory that

these abilities have their developmental precursors in the interpretation of causal biological motion.

Studies of the brain regions involved in theory of mind tasks have also provided evidence that there is an overlap between those areas involved in mental state reasoning, as well as those areas involved in affective processing and predispositions to respond. This is seen as reflecting the survival and adaptive advantages that these capacities provide in terms of interpreting and predicting the behaviour of others and in making quick distinctions about potential friends or foes. On the basis of these studies, Klin et al. (2000) suggest that mentalising is an outgrowth of social-affective experiences, thus reversing the direction of earlier proposals put forth by researchers such as Baron-Cohen (1988) who argued that it is theory of mind mechanisms which make possible reciprocal social engagement and communication. Klin and colleagues reject the notion that specific theory of mind mechanisms are necessary for social development, and at these are neurobiologically pre-determined. They point out that from an evolutionary perspective, it would be peculiar if social engagement and relationships, so essential for survival, were dependent on the development of relatively sophisticated theory of mind abilities. It is much more likely that it would be based on a highly redundant and plastic system, rather than on a single mechanism, and indeed they suggest that there are many different types and pathways to social behaviour and competencies. They conclude that to focus separately on thought and feeling is probably artificial and unhelpful in the context of social engagement. Moreover, they consider these different elements as being integrated to such an extent that they cannot be fully understood in isolation.

Klin et al. (2000) regard social competence as multifaceted, involving both primitive and more sophisticated cognitive aspects that act synergistically. They draw attention to the fact that there is a component to social engagement which requires the processing of fast-shifting facial expressions, voice inflections and posture and which is automatic, immediate and intuitive. This process takes place at the same time as more sophisticated aspects of social engagement involving pretence, teasing, humour, irony, and metaphor. These conclusions are consistent with other findings (Esteves et al., 1994) that subjects show autonomic responses to different facial expressions even when they are unable to identify the face even when the face is masked. It is also consistent with LeDoux's work (1996) on the fear response from which he draws the conclusion that there are two routes for processing emotions: a "fast and dirty" route that involves autonomic response and action, and a "slower" more reflective route involving recognition. Depending on which route is impaired, this can lead to recognition without

emotion, or emotion without recognition.

### **Current Models and Status of Research on the Developmental Determinants of Theory of Mind**

In the next section, the different accounts of theory of mind development from early infancy on will be presented, followed by a review of empirical evidence. A large body of empirical research has been stimulated by the debates between proponents of differing accounts of the nature and development of theory of mind, as well as by the attempt to test hypotheses regarding the links between theory of mind deficits and autism.

#### ***Theory of Mind and Infancy***

Without the luxury of language as a tool to assess the presence of mentalising during infancy, researchers and theorists must essentially rely on interpretations of infant behaviour observed in natural or experimental conditions. Current theories have been influenced by empirical evidence coming from two very different child development literatures. The first can be referred to as the “cognitive competency model” and involves social attribution studies in the tradition of Heider and Simmel (1944). The studies focus on how children perceive the movement of relatively simple objects such as geometric shapes, and investigate under which minimal conditions they attribute social agency to the objects. The classic study by Heider and Simmel drew attention to the fact that we readily use anthropomorphic explanations such as hitting, chasing or playing to account for the movements even of geometric shapes, as long as the movement maps onto our expectations and experiences of how people interact. The findings suggest that when the contact was short and rapid, it was interpreted as hitting, but when it lasted longer, it was interpreted as loving, suggesting that we systematically attribute positive and negative valences to contact between agents. When the shapes moved in a contingent fashion, but without contact, a psychological relationship or communication was attributed them.

Findings based on this paradigm have been challenging to integrate with a second source of data, that of complex evidence of the early social, affective and communicative behaviour of infants. This involves observational data of abilities as they emerge developmentally and it is thus more difficult to clarify the exact process involved. Nonetheless, it is impossible to ignore in constructing a model of early social development. The two models are complex and will be briefly presented.

#### ***Perception of Movement Model***

The findings that infants as young as 6 and 12 months can differentiate self-



propelled objects (Premack, 1990) and goal directed behaviours (Gergely, Nadasdy, Csibra, & Biro, 1995; Leslie & Keeble, 1987), have led a number of theorists to conclude that infants are hardwired to perceive intentional movement. This is regarded by a number of theorists as the foundation of social cognitive abilities and theory of mind (Baron-Cohen, 1995; Leslie, 1994a; Premack & Premack, 1995).

Premack and Premack (1995) have proposed an account of the development of mentalisation which stresses the connection between social competence and theory of mind. They propose a theory that distinguishes between three hierarchically organised systems. The first system is defined as a perceptually based “intentional system” in which objects that are self-propelled and move in a goal directed fashion are seen as intentional, whereas induced movement in objects that are not self-propelled is seen as causal. In this system, intentionality is seen as intrinsically associated with action, rather than as a mental state which is how it may generally be regarded by adults. Premack and Premack’s position is that infants are hardwired to interpret perceptual input concerning movement in these ways, and that they distinguish between intentional movement of self-propelled objects and causal movement of non-self-propelled objects. The second system is cognitive in nature and is defined as a “social system”; it involves the evaluation of the interaction between intentional objects. A negative or positive valence is attributed to the interaction depending on whether or not it is judged to be social (hitting or helping) and whether its intensity is positive (caressing) or negative (hitting). The third system is defined as “theory of mind” and involves the representation and interpretation of social interactions in terms of basic states of mind such as desires, beliefs and emotions.

### ***Social-Affective Experiential Model***

Instead of seeing infants as being hardwired to analyse movement in their perceptual field as per the perception of movement model, Spelke and colleagues (Spelke, Phillips, & Woodward, 1995) argue that infants have inborn abilities to see humans as different from other objects and agents, and they interact with them using different principles and with different expectations. Supporting evidence for this position includes findings that infants give preferential attention to faces (Johnson, Dziurawiec, Ellis, & Morton, 1991) and that they imitate people and not inanimate objects (Meltzoff & Moore, 1983a, 1983b).

There is a significant body of experimental evidence suggesting that from very early on, infants have particular expectations of humans. Evidence that infants expect humans to react in a contingent fashion comes from a number of studies, including that using the well known still-face paradigm (Tronick, Als, Adamson, Wise, & Brazelton,

1978). When mothers who have been interacting with their infants in a playful way assume a still face, infants as young as 2 months have been shown to first make attempts to continue the interaction and then to protest vigorously. That babies expect reciprocity in social interaction is evident in imitative games of infancy such as peek-a-boo (Trevvarthen, 1979), and studies suggest that infants as young as 9 months have an understanding of the roles involved in maintaining joint activity. Imitation is regarded as a precursor of reciprocal engagement, and new-born infants have been shown to imitate facial and hand gestures (Meltzoff & Moore, 1977), as well as the emotional expressions of adults; they also respond with interest when adults imitate them (Field, Healy, Goldstein, & Guthertz, 1990).

There is evidence that infants of as young as 3 months show sensitivity to gaze monitoring and it has been noted that infants look less at adults who turn their head, or close and avert their eyes (A. J. Caron, R. Caron, Roberts, & Brooks, 1997). By 5 months they can follow the gaze of another person towards what becomes an object of joint attention (Butterworth, 1991), and by the age of 6 months they are able to engage in a vocal dialogue involving turntaking and emotional communication (Ricks, 1989). There is evidence that at 9 months infants use pointing with the intention to communicate a request (Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979).

As Wellman and Lagattuta (2000) point out, what is in dispute is not that infants display these social behaviours, but rather how to interpret these actions. Most infant development researchers observe a transition in the social interactions of infants between 8 and 14 months, which is thought to reflect changes in the awareness of self and others. Some theorists interpret the evidence as suggesting that infants have an intentional understanding from very early on (Premack, 1990; Trevvarthen, 1979). Others, including modularists like Leslie (1994) and Baron-Cohen (1994), place the emergence of an intentional understanding at the end of the first year, as do Tomasselo (1995) and Bretherton (1991).

Wellman and Lagattuta (2000) make the observation that if it were the case that infants showed intentional awareness of persons, this would fit well with the findings reviewed earlier, namely that at this time infants show an ability to follow visual gaze, engage in social referencing and communicate with simple gestures and single words. However, they opt for a more cautious interpretation in suggesting that infants begin to recognise regularities in human movement, which sets the stage for later intentional interpretations. They contend that infants learn by the end of the first year that human arms, for example, move towards objects, and so begin to understand components of the

object-directed aspect of intentional action. While they make it clear that it is possible that infants do indeed acquire understanding of intentionality earlier on, they point out that the most cautious interpretation places the emergence of intentional understanding in the latter half of the second year. Bartsch and Wellman (1995) interpret this evidence as indicating that, at this early stage, infants understand that people have subjective experiences such as desires and emotions.

### ***Theory of Mind of Toddlers during the Pre-School Period***

Pioneer theory of mind researchers have drawn attention to the remarkable fact that pre-schoolers from diverse cultures all around the world are able to predict the actions of test characters like Maxi, indicating that they are able to understand that Maxi will be guided by a false-belief in looking for the chocolate. This is regarded as evidence that at age 4 children use the triad of beliefs, desires and actions central to everyday psychology as well as a causal explanatory system that is also referred to as a belief-desire reasoning framework (Fodor, 1987; Wellman, 1990).

Other tests of these abilities include unexpected transfer and deceptive box tasks in which, for example, pencils are transferred from a pencil case to a candy box, after which the child is asked where someone will look for pencils when they enter the room and see the pencil case and candy box. A review of studies using over 500 false-belief conditions with different procedural conditions confirms that regardless of the different conditions employed, children's chances of succeeding at this task increase dramatically as they get closer to age 4 (Wellman & Bartsch, 1988). As Wellman and Bartsch point out, the earlier pre-occupation with designating age 4 as the critical point in the development of theory of mind led to the simplistic conclusion that a mentalistic understanding of people was an all or nothing affair, and could be reduced to one single component, the understanding of false-belief. Like Dunn (1988) they helped to redress this imbalance by providing data obtained in more naturalistic contexts.

Wellman and Bartsch (1988) analysed the development of children's early use of mental stage terms in order to examine whether or not this would be shown to be in line with laboratory based findings that children's mentalistic understanding emerges only at the age of 4. Their findings suggest that children develop a primitive understanding of inner states and the motivations for actions long before they understand belief. At 18 months of age, children use words such as "want" and "mad" to refer to desires and emotions, but they only begin to use "think" and "know" to refer to thoughts and beliefs by 3 years of age. They argue that children use a primitive desire psychology to think

about themselves and others and that at the beginning of the pre-school years, children already have a subjective psychological understanding of people. There is also laboratory evidence suggesting that very young children can understand that different people may have different emotions and desires (Denham, Zoller, & Couchoud, 1994); this evidence includes a charming foodpreference study showing that 2-year-olds are able to take into account an adult experimenter's preference for broccoli even when the toddlers themselves prefer fishcrackers (Repacholi & Gopnik, 1997). Wellman and Bartsch conclude that developmental data corroborate the hypothesis that a substantial transformation in children's conceptual thinking takes place at around age 4. However, the change happens gradually, starting with early mentalism based on an understanding of desires at 2 years of age, followed by references to thinking at 3 years of age leading to a belief-desire understanding that emerges gradually until it is well-established at the age of 4.

Research by Dunn and her co-workers (Dunn, 1988; Dunn, Bretherton, & Munn, 1987; Dunn, Brown, Slomkowski et al., 1991), using a combination of observational data collected in naturalistic settings as well as theory of mind assessments, has provided us with invaluable information about the development of children's understanding of themselves and others. Dunn, Brown, Slomkowski et al. (1991) in a study focusing on the period between 33 and 40 months of age, found a statistically significant shift in the use of causal references centering on internal states. Initially, children mostly made causal references in the context of talk about behaviour and actions, but by 40 months of age there was a predominance of causal references centering on internal states in conversations with their mothers as well as siblings. Dunn and colleagues also investigated whether this growth seemed to take place primarily in contexts motivated by self-interest, or in more reflective-pretend situations where children were less concerned with overt goals or were pretending, or in positive situations where children were sharing humour, playing or expressing caring or concern. The results indicate that at 33 months of age causal discourse was as likely to be related to self-interest as to reflective-pretend, but that by 40 months of age, children were more likely to use causal explanations in a reflective-pretend context. In the specific context of conflict, they found a substantial increase in children's use of reasoning with their antagonists, but somewhat sadly, this was used in the service of self-interest, rather than for conflict resolution or for taking into account the other person's goals and desires. The study also included tests of the understanding of the feelings of others, as well as false-belief assessments (Bartsch & Wellman, 1995), and the results showed that the frequency of use of causal discourse at

33 months of age was related to performance on the false-belief task 7 months later. Furthermore, children who used causal discourse in disputes performed better on the assessment of inner state understanding at 40 months of age. Dunn, Brown, Slomkowski, et al. have also shown that false-belief performance at 40 months was correlated with individual differences in children's connectedness (the degree to which the speaker takes the other speaker into account) in their conversations with friends when assessed 7 months later.

In another study, Youngblade and Dunn (1995) found that individual differences in joint pretend play were correlated with children's performance on false-belief tasks. More specifically, the frequency with which children take on the roles of others was correlated with the ability to explain the actions of others in terms of false-belief understanding. Kavanaugh, Eizenman, and Harris (1997) have shown that most children begin to engage in pretend play before their first birthday. By 24 months, they are already engaging in a range of pretend behaviours, and by 30 months, they use the term "pretend" and show that they understand that when others pretend, it is not for real. Pretend play, with its endless explorations and discussions of what the different characters may or may not do, is a core feature of friendships between the ages of 4 and 5. Dunn (1988) also suggests that it transforms the quality of friendships, and fosters an understanding of social roles, social rules and other minds.

At a theoretical level, there are still unresolved differences in the way pretend is understood. Leslie (1987) argues that like theory of mind, pretend involves meta-representation. Perner (1991a, 1991b) disputes this explanation and points out that engaging in pretend only requires secondary representations, which he also refers to as preliefs. Lillard (1993) adds a cautionary note in stating that the ability of young children to make the real-pretend distinction should not be equated with an understanding of pretend as a mental state.

Humour in children has been relatively neglected as a focus for understanding the development of theory of mind, in spite of being a core aspect of adult relationships. Not surprisingly, differences in the use of humour by very young children in their family relationships have been found to be related to their performance on false-belief tasks, with frequent jokers performing better than their more serious peers (Woodworth, 1993). Dunn, Brown, and Beardsall (1991) note an increase in the use of jokes between 33 and 47 months of age. The content of jokes has also been found to differ depending on the relationship, suggesting that children are already aware that their siblings and mothers find different things funny. For example, jokes with siblings often involved the

disgusting and the forbidden, whereas these topics were perhaps wisely avoided when joking with their mothers. A number of researchers (Dunn, 1988, 1999; Tizard & Hughes, 1984) have concluded that humour and the playful context in which it occurs provide opportunities for social learning. Dunn (1988) argues that, like pretending, the playful atmosphere permits a distancing which sustains the child's innovating capacity and allows them to happily try things out. Furthermore, she points out that humour allows the child to explore the limits of insult, criticism and the expression of disgust in an emotional relationship, and to discover another type of intimacy through the sharing of absurdities and humour.

### *Theory of Mind at Six and Beyond*

Impressive though the abilities of pre-schoolers to understand the beliefs and desires of others may be, they are only a fraction of the abilities which adults use in everyday communication, work, love, play and art. Except in emotionally charged contexts, pre-school children struggle to know what others may feel and think (Flavell, Green, & Flavell, 1995), and it is only during the primary school years that children develop the more general ability to know when others are thinking, as well as imagine what they may be thinking. By the end of the primary school period, children have generally also developed a more nuanced understanding of the behaviour and thoughts of others as individual, based on personal characteristics which are likely to be stable over time, and depending on knowledge, experience, tastes and personalities (Wellman & Lagattuta, 2000).

At the same time, children begin to display the capacity to talk about their own thoughts (Wellman, 1990) and, increasingly, to think about themselves in mental state and trait terms rather than mainly in terms of their physical attributes, abilities and context (Harter, 1999; Wellman, 1990). These shifts are apparent in their self-representations and reflect the capacity to form higher order generalisations based on their behaviour, performance and interpersonal relations (Harter, 1999). In contrast to younger children who describe themselves in absolute terms, for example, as always being nice, older children begin to describe their qualities as more mixed, depending on the situation. While this may help to protect them from all-out negative self-evaluations, their growing critical abilities also present new challenges to their self-esteem. If we accept Harter's model of self-esteem as reflecting the ability to reconcile aspirations with actual abilities or qualities, the question is whether this ability is associated with theory of mind.

### ***Theory of Mind and Language Development***

Recent research reveals interesting causal links between language acquisition and intentionality. There is evidence that joint attention in infants of 1 year and younger, considered an early manifestation of an awareness of others as intentional agents (Baron-Cohen, 2000b), predicts language acquisition (Sigman & Ruskin, 1999). Tager-Flusberg (2000) has suggested that this is because early word learning depends on the interpretation of words and communicative gestures as intentional acts. At the end of the pre-school period, language abilities have been shown to be associated with theory of mind performance on false-belief tasks (Astington & Jenkins, 1995; Happé, 1995; Tager-Flusberg, 1996). Moreover, J. G. De Villiers and P. A. De Villiers (1999) found that language abilities, especially complement syntax, predicted variance in later performance on false-belief tests. In general, language based representational systems have advantages in that they provide both a syntax which facilitates thinking about human behaviour and symbolic representations elaborate enough to overcome experiential evidence which would otherwise be compelling (Perner, 1991b). Language also opens a door that gives access to interactions in which children can get to know the minds of others (Dunn, Brown, Slomkowski et al., 1991).

Research involving subjects with autism, Asperger syndrome, deafness and language delays indicates that the relationship between verbal IQ, theory of mind test performance and actual social abilities can be complex, especially when psychopathology enters into the equation. Theory of mind performance is generally correlated with verbal ability (Happé, 1995), but a gap between performance on theory of mind tests and real-life social abilities has been noted (U. Frith et al., 1994). Klin et al. (2000) and Tager-Flusberg (2000) suggest that language can be used as a kind of scaffolding by high functioning autistics to “hack out” solutions to theory of mind tests; however, autistics do not have the ability to use these capacities spontaneously as passers normally do. Indeed Klin et al. call attention to the need for a theory of mind in action. This they argue would involve a series of additional skills, including the ability to react intuitively to inflections and tone of voice as well as to fast-changing emotional expressions such as those measured by Baron Cohen’s Reading the Mind in the Eyes Test (Baron-Cohen, 1997).

### ***Individual Differences***

There is new evidence confirming that the quality of the early attachment to the caregiver has a significant impact on theory of mind development (Fonagy, Redfern, & Charman, 1997). There are also considerable individual differences in the pace of theory

of mind development depending on factors such as family composition and emotional climate, as well as parenting practices and competencies with regard to talking about emotions and their causes.

Youngsters with siblings seem to be at an advantage in acquiring theory of mind, and there is evidence that 3 to 5-year-olds with siblings pass false-belief tasks earlier than only children of the same age (Jenkins & Astington, 1996; Perner, Ruffman, & Leekman, 1994). At this stage it is not clear whether these advantages are temporary or enduring, and whether the gap closes or opens up during the primary school years. Play experiences with older siblings (Youngblade & Dunn, 1995) and interactions with older people generally (Dunn, Brown, & Beardsall, 1991; C. Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki, & Berridge, 1996) have also been observed to contribute to children's early understanding of beliefs and mental states. The advantage of having siblings may be partly due to the additional opportunities for pretend play, especially role-play (Youngblade & Dunn, 1995). The latter provides an excellent opportunity to imagine and begin to understand the beliefs, desires and actions of others, and has been shown to predict false-belief understanding (Astington & Jenkins, 1995).

The extent to which families talk about feelings and their causes has been shown to be predictive of children's abilities in this regard at age 3 and of affective perspective taking at age 7 (Dunn, Brown, & Beardsall, 1991). These positive influences are in contrast with the negative impact of growing up in families with high negative affect or with parents who have a high need for control and who are especially intolerant of any adverse behaviour (Denham, Renwick-DeBardi, & Hewes, 1994; Dunn & Brown, 1994).

Sex-differences in performance on theory of mind tasks are generally in line with findings of female advantages in folk psychology (Baron-Cohen & Hammer, 1997; Baron-Cohen, Jolliffe, Mortimore, & Robertson, 1997; Halpern, 1992). There is certainly evidence that already by age 2, girls talk more extensively about emotions (Dunn et al., 1987), but this may partly be because parents tend to talk more about the causes and consequences of feelings to girls (Haden, Haine, & Fivush, 1997; Reese, Haden, & Fivush, 1993). The findings are not conclusive, however, and it is not clear until what age these differences persist (Dunn & Brown, 1993).

### ***Theory of Mind, Social Adaptive Functioning and Psychopathology***

Following the interest in the account of autism as a deficit in mentalisation, a number of studies were conducted to explore whether theory of mind difficulties were also evident in other clinical groups which present with social difficulties. With the



exception of schizophrenics, who showed marked difficulties on second order theory of mind tests during acute episodes (Corcoran, 2000), there were no positive findings, and depressives showed no impairments on second order tests. Happé and U. Frith (1996) also did not find evidence of deficits on second order tests in conduct disordered children aged 6 to 12, although as they themselves observe, a more challenging theory of mind test, such as the Strange Stories, might have been more appropriate. They noted that there was evidence of problems in mentalisation in interpersonal contexts and concluded that children with conduct disorder may not have a theory of mind deficit, but rather a distorted theory of mind or a theory of nasty minds, based on their experience of growing up in environments where negative reactions predominate. Problems with executive control, rather than theory of mind, were also considered as an alternative explanation. Similarly, Blair and co-workers (Blair, 1995; Blair et al., 1996; Blair, Jones, Clark, & Smith, 1997) found no theory of mind deficits using the Strange Stories with psychopaths who had committed first degree murders, leading them to the conclusion that psychopaths have deficits in empathy, rather than in theory of mind (Blair, 1997).

Such deficits in empathy should arguably also be associated with measurable deficits in mentalisation about others, and findings by Fonagy and colleagues (Fonagy, Target, M. Steele, & H. Steele, 1997) suggest that this is indeed the case. Using measures of attachment and reflective functioning, this group of researchers have found evidence of significant deficits in mentalisation in borderline patients (Fonagy et al., 1998), as well as in psychopathic and non-psychopathic prisoners who have committed first degree murders (Fonagy et al., 1997). These findings suggest that there are indeed significant mentalisation deficits in some non-autistic clinical groups with social difficulties, when compared with normal controls. It may well be that the lack of significant findings with regard to theory of mind deficits in populations with psychosocial difficulties is due to the measures being pitched at too low a level.

Evidence from neuroimaging studies point to considerable overlap in the areas involved in affective processing and theory of mind, and there appears to be a neurofunctional loop involved in their integration in social responses (Damasio, 1994; Klin et al., 2000). Seen from this perspective, a number of different scenarios could explain social and interpersonal difficulties, and it is here that research is evolving.

### *Theory of Mind and Executive Control*

Authors such as Wimmer and Hartl (1991) have suggested that as the child acquires increasingly sophisticated mental state concepts, a better understanding of his or

her own mental states, as well as a better control of mental processes, should follow. This hypothesis has also been used by researchers to explain the co-occurrence deficits in self-control and theory of mind that are associated with schizophrenia (C. Frith & Corcoran, 1996) and autism (Carruthers & Smith, 1996). Executive control is used as a label for processes involved in the control of behaviour such as planning, co-ordinating, and controlling sequences of action (Welsh, Pennington, & Groisser, 1991) and can be said to refer to the ability to focus on a specified goal despite distracting alternatives. Results from a number of studies broadly support the notion that executive function and theory of mind are linked (Frye, Zelazo, & Palfai, 1995; Gordon & Olson, 1998; Hughes, 1998; Perner & Lang, 2000), although there are some exceptions (Tager-Flusberg, Sullivan, & Boshart, 1997). Perner and Lang (2000) have recently attempted to clarify the developmental relationship between theory of mind and executive function by reviewing the data samples pertaining to autistic versus normal subjects. They conclude that all recent brain imaging evidence suggests that common regions are involved in theory of mind and executive function, and that there is substantial experimental data supporting the view that there is a direct link between the two. At this point, the exact nature and direction of the relationship remains unclear.

### **Controversial Issues in Assessing Theory of Mind in Older Children**

It is unlikely that theory of mind researchers would argue today that children of 4 years old have fully developed mentalisation abilities, i.e., at the same level of sophistication as adults. At the same time, the legacy of the research which has equated theory of mind acquisition with passing false-belief tasks has persisted at a methodological level. The limitations of using standard second order false-belief tasks with children above the age of 6 have been conclusively demonstrated (Happé & U. Frith, 1996). As is reflected in Table 2, the vast majority of available theory of mind measures assess skills which children have generally mastered by the time they are 4 years old, and it is evident that there are few tests pitched at the 6 year old level and beyond. Unfortunately, promising exceptions like Happé's Strange Stories, which is said to be pitched at an 8 year old level, have predominantly been used in studies of autism, and there is no data on the performance of normal and other clinical samples.

Table 2

*Some Tests of Theory of Mind (Adapted from Baron-Cohen, 2000)*

Test of Theory of Mind	Authors	Age of passing
Understanding of different desires as in food preferences	Repacholi & Gopnik, 1997	18 months
Seeing leads to knowing	Pratt & Bryant, 1990	3 years
The functions of the brain	Wellman & Estes, 1986	3-4 years
The mental physical distinction	Wellman & Estes, 1986	3-4 years
Tests of deception	Sodian & U. Frith, 1992	4 years
First-order false-belief tasks	Wimmer & Perner, 1983	4 years
The appearance reality distinction	Wellman & Estes, 1986	4 years
Recognising mental state terms in a list	Baron-Cohen & Goodheart, 1994	4 years
More complex causes of emotions (i.e., desires and beliefs)	Harris et al., 1989	4-6 years
Second-order false-belief tasks	Happé, 1993	6 years
Understanding metaphor, sarcasm and irony	Happé, 1994	8 years
Reading mental states from the expression in the eyes	Baron-Cohen et al., 2001	6-12 years
Faux pas recognition	Stone, Baron-Cohen, & Knight, 1998	Adult
Reading complex mental states in the eyes	Baron-Cohen, Jolliffe et al., 1997	Adult
Understanding what another would know	Goel et al., 1995	Adult

Promising results from a study of children's theory of memory (Fabricius & Schwanenflugel, 1994) demonstrate that it is possible to conduct research into these developing capacities and that older children have the ability to think about what contributes to the construction of their theory of mind. The results show a developmental trend in the capacities of children aged 6 to 8 to appreciate the impact of participation in a card-sorting task on recall. At the moment, very little is known about the abilities of children to use meta-cognitive abilities and to consider the mental processes underlying their own mental states as well as that of others in everyday caring and conflictual exchanges. The apparent complexity of defining older children's mentalisation capacities has probably contributed to the dearth of research attempting to map the development of mentalisation through the school years to adulthood, as well as to the absence of literature regarding mentalisation and theory of mind in older children. Part of the challenge is to find meaningful markers and valid assessments of these changes in children's abilities and cognitions regarding perceptions and affective states in others and in themselves, especially as they affect interpersonal processes. The emphasis in these assessment tasks needs to shift from the prediction of action towards understanding mental processes and the capacity to use this understanding in interpreting affective and interpersonal processes.

### **Limitations of Theory of Mind Research and Theories**

On the whole, one of the major limitations of theory of mind research has been its cognitive bias and its relative neglect of the development of affective understanding, that is to say, the broader relationship between theory of mind and affect regulation. This criticism echoes that of Klin and colleagues (Klin et al., 2000), that what is lacking is a theory of mind in action. Furthermore, there is no theory of normal and abnormal development. As a result, there is no effective model for understanding the role of theory of mind in affective and behavioural disorders, other than disorders with a strong genetic component, such as autism, which is associated with severe deficits in socio-cognitive skills. The conceptual links and empirical evidence linking theory of mind to affective cognition and regulation will be considered in more detail in Chapter 2.

Another limitation in theory of mind research is that the development of self-understanding has been largely neglected. All the tests to date have focused on understanding the mental states of others, and there are no theory of mind measures focusing on children's understanding of their own affects and mental states. In this thesis, an attempt will be made to address this gap by introducing a measure, the Child

Reflective Functioning Scale (CRFS: Target et al., 2001), which assesses mentalisation in respect to the self, as well as to others.

The review of studies investigating whether or not theory of mind deficits are associated with psychosocial problems has also revealed a lack of age appropriate and more nuanced theory of mind measures. The measures generally used assess relatively low level skills. This suggests that theory of mind researchers have failed to consider whether or not these tests would be appropriate for detecting the more nuanced mentalisation deficits which likely to be associated with psycho-social difficulties.

Finally, another limitation is the neglect of theory of mind development in school age children, particularly its development beyond the acquisition of second order representation. Traditional theory of mind tasks have frequently focused on the correct labelling of outcomes and on the prediction of action, rather than on children's ability to appreciate the mental processes involved. With a few exceptions, theory of mind theorists and researchers have shown little interest in the subsequent development of mentalisation.

### **Conclusion**

Theory of mind researchers have provided us with compelling evidence of the early development of children's theory of mind: 1) the early emergence of intentionality in infancy; 2) false-belief understanding at around 4 years of age; and 3) understanding of intentionality in everyday communication. The studies focusing on theory of mind deficits in individuals with autism have contributed to our understanding of the prerequisites for theory of mind development. More recently, neurological studies are breaking new ground and providing data that allow for a reassessment of the current understanding of the dynamic relationships between theory of mind, affect, executive function and social adaptation. Despite these significant contributions and promising recent developments, a number of limitations have been identified. The principal problems are the absence of a model of psychopathology and the neglect of a theory of self. In addition, the absence of more sophisticated tasks is impeding research and advances in our understanding of the development of a more sophisticated, adult-like theory of mind involving cognisance of the interpretative nature of mentalisation. It is clear that new methods for studying the mentalisation capacities of older children need to be developed.

## **CHAPTER 2**

### **AFFECTIVE UNDERSTANDING, ATTACHMENT AND REFLECTIVE FUNCTIONING: THEORETICAL AND EMPIRICAL LINKS WITH THEORY OF MIND**

This chapter will focus on three domains of research and theorising that overlap with, or that have integrated important concepts and findings from the paradigm of theory of mind, namely that of affective understanding, attachment and reflective functioning. It will be argued that research addressing affective understanding, as well as attachment theory and research, complement empirical and theoretical contributions derived from the theory of mind paradigm. Lastly, the new reflective functioning paradigm that exploits the interface between the three previous paradigms, and that presents an attempt to integrate relevant findings and concepts from these paradigms, will be presented.

This chapter will introduce each of the three theoretical domains, discuss the way each domain links theoretically to theory of mind and overlaps with or complements this paradigm, before discussing the empirical research that clarifies the relationship between the paradigms. This review of the literature will lead to the elaboration of hypotheses that will be used to consider the validity of the test instruments used.

#### **Affective Understanding**

Over the past twenty years, an impressive, systematic and nuanced body of knowledge centering on affect and, more specifically, on children's affective understanding, has emerged. The resulting emotional understanding model complements the work on theory of mind in many ways. Furthermore, the findings from the large and rapidly growing body of research in this area underscore the contribution of environmental factors, especially factors within the family, in the development of a range of different mentalising capacities having to do with the understanding of affects in the self, others, and also in the context of relationships. The conclusion and evidence that relational factors contribute significantly to children's capacities to mentalise about emotions present a healthy challenge to the biological determinism favoured by many theory of mind researchers.

Undeniably, the most radical challenge to simple biological determinist accounts comes from research linking the quality and complexity of parents' abilities to mentalise about their early relationships with their own parents (when measured before the birth of

their children) with the future emotional understanding and theory of mind abilities of their children. In addition, it is apparent that affective understanding is much more heterogeneous than is suggested by its treatment in theory of mind literature. The extent to which researchers and theorists have managed to both identify different aspects of affective understanding, and collect evidence suggesting that different factors may predict different skills reflects the sophistication of the research and the richness of the domain under investigation. Equally promising is the delineation of the more sophisticated skills used in understanding mentalisation, affects, beliefs, thoughts and desires and their impact on close relationships and on intrapsychic processes. This shift extends and redefines the subject and the objectives of research and theory to include more complex levels of mentalisation, whether seen in terms of theory of mind, cognitions about affective and relational processes or reflective functioning.

In what follows, the aim will be to present a comprehensive review of the field of affective understanding, but rather to focus on introducing the key theories and findings related to emotional understanding that overlap with, and complement those of the theory of mind paradigm. The focus will be on affective understanding as it is derived in the course of development, as well as those factors that are likely to impact on the development of this understanding. Furthermore, the evidence that processes occurring within the family and close relationships affect the development of affective understanding will be considered, as well as the theories regarding the possible processes involved.

### ***Different Theories and Overlap with Theory of Mind***

While the notion of developing a theory of mind remains attractive, the narrow conceptualisation of theory of mind as being primarily concerned with thoughts and beliefs at a relatively basic 4-year-old level, along with the neglect of affect, has resulted in the findings associated with this paradigm being of limited interest except with regard to autism. Given that emotions can be regarded as intentional states in much the same way as beliefs (Fonagy, Gergely, Jurist, & Target, 2002), there is no theoretical justification for this neglect.

As outlined in Chapter 1, one of the major contributions of the theory of mind literature has been the robust evidence that at age 2 children focus on desires, goals and intentions, but that as they get closer to 3 years of age, they increasingly take into account the beliefs of others and what others know and think. This capacity to be sensitive to various appraisal processes has been shown to be the case whether the focus is on

children's emotional judgement or on spontaneous references to mental states. What relevance does this finding have for a model of the development of children's affective understanding? Dunn's (1988) observations suggest that the development of the ability to conceive of other minds in terms of a belief-desire psychology is in fact paralleled by a shift in children's ability to understand the social world. From a theory of mind perspective, this development is seen as reflecting either a growing sophistication of children's understanding of mental representations (Astington & Gopnik, 1991; Bartsch & Wellman, 1995; Perner, 1991b) or maturing skills at simulating the appraisal another child might make (Harris et al., 1989; Gordon, 1986, 1992b). As Harris (2000) points out, these accounts fail to identify possible facilitators of the development of these abilities, and development is seen only in terms of cognitive maturational processes. It has become clear from Dunn's (1988) contributions that children's developing understanding of others emerges in the context of social affective relationships and communicative interactions within the family. The questions that remain do not concern children's theory of mind capacities per se, but rather the development of children's capacity to understand affects in themselves and others, as well as in interpersonal relationships. In addition, there are also questions regarding the different bio-psycho-social factors that impact on, and contribute to this development, as well as the relationship between cognition and affect in this process.

In the course of this review, the names of researchers cited in Chapter 1, such as Dunn, Bretherton, Wellman and Harris (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986; Dunn, 1988; Wellman, Harris, Banerjee, & Sinclair, 1995) will recur. These developmentalists have made important contributions to both theory of mind and affective understanding literatures. Researchers and theorists such as Campos (1983), Denham (1998), Dunn (1988) and Saarni (1999) have developed empirically based models of the development of social and affective understanding in children. These models generally share the functionalist premise that emotions have interpersonal and intrapersonal regulatory functions. They also share the social-constructivist premise that, as Saarni puts it, "...we learn to give meaning to our context dependent experience via our social exposure and our cognitive developmental capacities" (p. 12). The social context that these researchers have in mind is one in which the specific individual aspects of relationships are considered to be as important as other factors, such as gender and power relations. These models can be seen to contrast with nativist accounts of theory of mind development, in that it is relationships, rather than the maturation of innate modules, which are considered as driving the development of emotional understanding.



The role of self-concern in developing the skills necessary for understanding affective signals and affective processes in relationships, and the dialectical relationship between the development of these abilities and a sense of self, self-efficacy and self-regulation, are the central concerns of most theorists in this area. This concern with the development of the self can be seen as complementing the theory of mind notions that infants come to have a sense of the self as a “physical agent” (Leslie, 1994b), that in their second year they show the beginnings of an awareness of the self as an “intentional agent” (Wellman & Phillips, 2001), and that by 3 to 4 years of age they show an understanding of the self as a “representational agent” (Perner, 1991b; Wellman, 1990).

Dunn (1988) has proposed a functionalist “relationship” model of social understanding in which “development starts from the child’s interest in and responsiveness to the behaviour and feelings of others” (p. 186). She regards child factors such as the child’s agency and motivation to achieve goals in what is inevitably a social context of family relationships, as well as the child’s access to and participation in parental and family talk about emotions, as two central factors in the development of social understanding. Her model gives weight to the child’s developing sense of agency and self, to the cognitive changes which facilitate participation in discourse and argument and to “the affective significance of the tension between this self-concern and the child’s relationships with other family members” (p. 186). Dunn has been clear in her rejection of what she considers to be deterministic accounts in which emotional understanding is seen as determined by the quality of attachment relationships. She points to the empirical evidence that there is considerable variety in child outcomes regardless of parent factors, and suggests that relationships with siblings, friends and other adults can fill in the gaps left by inadequate relationships with their parents.

Denham (1998) places more emphasis on parental coaching and on the learning that takes place in relationships with parents. She regards parents’ emotional expressiveness, their investment in explaining the causes of affects and the appropriateness of their affective responses to those of their children as central to the development of affective understanding. In a related vein, Harris (2000) has argued that parental expressiveness and narrative elaboration concerning incidents that are emotionally loaded are crucial, because they provide narratives which act as organisers of affect and affective memories for the child. Narratives about emotionally loaded events are thus thought to provide the mental scaffolding which helps the child to think about similar events when he or she subsequently encounters them. The argument is that parental elaboration nurtures the development of cognitive skills involving encoding and

recall, as well as autobiographical memory (Bruner, 1990; Fivush, Haden, & Reese, 1996) of emotionally charged episodes. In line with this, other researchers have concluded that narrative capacities are central to the development of the self and emotional organisation (Stern, 1985; Wolf, 1990), as well as to emotional and behavioural regulation (Slade, 1994). Children's language skills also make possible what Neisser (1991) has called the "extended and remembered self", which is considered to be based on narratives and memories. Indeed, the self can be seen as partially linguistically constructed, a process which, as Harter (1999) points out, is highly interpersonal and which has been referred to as the narrative co-construction of the self (Crittenden, 1994; Nelson, 1993). In this process, semantic memory of parental narratives is seen as underlying children's perceptions of their traits; episodic memory of events is seen as underlying their knowledge of emotion scripts surrounding these events; and finally, autobiographical memory is seen as codifying experiences specific to the self.

These different contributions to the field of affective understanding, i.e., the detailed investigation of family and relationship factors and the mechanisms of their impact on the development of affective understanding in childhood, contrast strongly with nativistic accounts of theory of mind development, as presented in Chapter 1. Before turning to a review of these relationship factors, the relationship between affect and cognition will be considered in order to clarify the role of cognition in emotional processes.

### ***Different Aspects and Levels of Affective Understanding***

What is affective understanding? Research indicates that far from being a singular ability affective understanding is multifaceted, and a multitude of skills and abilities have been delineated. These include: 1) the ability to identify and label emotion expressions (Camras & Allison, 1985; Denham & Couchoud, 1990; Ekman et al., 1972; Field & Walden, 1982), as well as the capacity to decode and label complex emotional reactions based on facial expressions, body language and vocal qualities (Saarni, 1999); 2) possessing a vocabulary of emotion words and mastering emotion language, thus being able to use emotional labels to communicate about emotions (Bretherton et al., 1986; Denham, 1998; Saarni, 1999) and closely related to the mastery of emotion scripts which are considered to be learned and to provide a sense of predictable sequences following certain events (C. Lewis, 1994; Russell, 1991; Saarni, 1999); 3) knowledge of the common situational elicitors of emotion and the ability to understand the emotional consequences of these situations (Denham, 1998; Denham & Zoller, 1991; Dunn &

Hughes, 1998; Fabes, Eisenberg, Nyman, & Mischealieu, 1991; Harris et al., 1989; M. Lewis & Michalson, 1983; Strayer, 1986); 4) being able to consider the intentions and inner states of others (Wellman & Lagattuta, 2000); 5) the capacity to take into account unique information about others which may influence their emotional reactions (Gnepp, 1989; Gnepp & Gould, 1985), including information concerning the cultural background of the person, their personality, disposition, likes and dislikes, hopes and desires, past experience, or the information that they have available to them; 6) the capacity to understand differences between inner-feelings and outer-expression and to understand social and cultural practices, as well as personal motivations for dissemblance (Denham, 1998; Saarni, 1999); 7) the capacity to understand complex emotions and to consider mixed emotional reactions (Harter & Buddin, 1987); 8) the capacity to appreciate the impact of time on affective reactions; 9) becoming aware of emotion regulation strategies (Altshuler & Ruble, 1989; Beaver, 1997; Bernzweig, Eisenberg & Fabes, 1993; Denham, 1998); 10) the capacity to understand the impact of the nature of the relationship, including its closeness and the degree and direction of power in the relationship, on the intensity and depth of emotional reactions, as well as on the genuineness of emotional displays (Saarni, 1999); 11) the capacity to respond with empathy to another person's distress (Denham, 1998; Kestenbaum, Farber & Sroufe, 1989; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) and the ability to tolerate the distress that this may in turn evoke (Fabes, Eisenberg, & Miller, 1990; Saarni, 1999); and 12) awareness of emotional communication within relationships as well as relationship knowledge and understanding (Fonagy & Target, 2003; Fonagy et al., 1997; Saarni, 1999).

How do all these different abilities relate to one another and to other intellectual abilities, and is there a more efficient way to categorise? Greenspan (1979) has proposed a hierarchical model of social intelligence consisting of social sensitivity (manifested in role-taking and social inference), social insight (including social comprehension, psychological insight and moral judgement) and social communication (including referential communication and social problem solving). Social intelligence and conceptual and practical intelligence are regarded as components of adaptive intelligence. The latter, together with physical competence and socio-emotional adaptation (temperament and character) form the basis of personal competence.

Much less is known regarding the capacity to consider affects and mental states in relational contexts, and its impact on emotional reactions and interactions in close relationships. This has remained a relatively neglected area of study and is regarded as a key dimension of what Fonagy, Target, and co-workers have termed "reflective

functioning”.

### *Affect Understanding and Self-Understanding*

Many theorists, and especially theory of mind theorists, seem to assume that we have an automatic understanding of and access to our emotional reactions, the assumption is also that we should be able to identify our basic emotional responses. However, there is evidence that this is not necessarily the case, and some children and adults have severe difficulties in identifying their own emotional reactions (Krystal, 1988; Saarni, 1999). In its extreme form, this has been designated by some researchers as a condition called alexithymia. As Saarni concludes, it may well be that some children who have had developmental experiences in which their self-states and intentionality have not been recognised, or who have suffered abusive or mentally ill parents, struggle to identify their own internal states. Self understanding also involves more a sophisticated ability, appearing roughly at age 4, to organise autobiographical memories as personally experienced, and it requires a command of emotional language to give expression to and communicate these personal reactions (Saarni, 1999). From Fonagy's perspective, children's understanding of their own affects as mental phenomena, constructed by mental processes rather than being determined by events, can help them realise that mental states are amenable to change and are ultimately under their own control. This is a first step to considering mental strategies such as the redefinition of situations or the use of distraction to change emotional experience.

Harter (1993) regards the self as an “active cognitive construction” developing from what Cooley (1902) has described as self-feeling and from the experience of being a cause of things; a similar notion found in the theory of mind literature and referred to as a sense of agency. Most recent writers on the subject consider this experience of the self as being a cause, as having intentions and an impact as central features of the self. Dunn (1988) adopts a similar position in that she sees the child's sense of agency in relationships as playing an important role in the development of self-awareness. In this context, empirical findings relating childhood depression to differences in attributional styles (Seligman & Patterson, 1986) underscores the importance of children's sense of their own agency. Depressed children were more likely to perceive the locus of control as external, rather than as internal.

Dunn (1988) also theorises that children learn to be sensitive to the way others perceive them, that they start to engage in a process of social comparisons at a much earlier age than has been theorised and that this process is driven by the child's desire to

be accepted and effective in the social world. In her account, the development of self-understanding is linked to the development of understanding of others, and both develop in social and close relationships. Young children's displays of shame and guilt, as well as the questions they ask and the jokes they make when siblings and adults comment about their behaviour, can be seen as evidence of the emergence of this concern about the approval of others. This occurs long before children are able to articulate this concern. Dunn raises the interesting point that while cognitivists emphasise the maturation of cognitive abilities as driving development in self and emotional understanding, emotion itself may stimulate the development of cognitions and the understanding of emotions; i.e., children learn to argue and think about those situations that cause the most conflict and the most heated emotions.

Denham (1998) argues that a combination of the child's cognitive abilities and socialisation or emotional reactions to the child underlies the development of what she refers to as the self-conscious or social-emotions. Her choice of these descriptives is interesting and reflects the interplay of the child's cognitive ability to see the self as a separate object that can be evaluated, the emotional reactions of significant others, and the internalisation of these reactions which results in generating pride or shame and subsequently more complex feelings and perceptions regarding the self.

The role and importance of self-representations as mediators of affect, motivation and behaviour is increasingly being recognised at a theoretical level (Harter, 1999). Harter (1999) proposed a Piagetian developmental model in which young children refer to behavioural and physical characteristics, preferences and group membership in their self-descriptions, whereas primary school children use trait-like attributes (friendly, intelligent, kind, fun to be with) in their self-descriptions. Damon and Hart (1988) describe a developmental trajectory in self-representations that goes from descriptions centered on the self, to descriptions focusing on interpersonal characteristics such as social skills in adolescence, to descriptions related to belief, personal philosophy and morality in adulthood.

The clarity and consistency of self-beliefs has been shown to be linked with self-esteem, and the evidence suggests that the less clear people are about their own attributes, the less positive they feel about themselves (Campbell & Lavelle, 1993). Interestingly, people with higher self-esteem tended to slightly overestimate the uniqueness of their attributes, although they were more accurate in describing their performance in an interaction than were those with low self-esteem.

### *Affective Understanding, Affect Regulation and Self Regulation*

In spite of the remarkable progress in this area over the past two decades, affect regulation remains one of the most challenging areas of investigation (Thompson, 1994). In part, the problem is due to the inherent complexity of affect regulation in and of itself, and the inevitable tension in considering applying rules and regulating emotion at the very time when it is at its most urgent, powerful, passionate and messy. Another fundamental difficulty faced by researchers is defining effective affect regulation, given that for many of life's difficulties, there are no optimal solutions (Saarni, 1999). This predicament is illustrated by the observation that children are often punished for expressing anger, no matter how appropriately they express it to adults. Saarni suggests that success in affect regulation ultimately depends on the individual's appraisal abilities and on the extent to which his or her way of dealing with affect contributes to a sense of self-efficacy.

Saarni (1999) defines affect-regulation as "the ability to manage one's subjective experience of emotion, especially its intensity and duration, and to manage strategically one's expression of emotion in communicative contexts. Optimal emotion regulation also contributes to a sense of well-being, a sense of self-efficacy and a sense of connectedness to others" (p. 220). This definition is similar to that of Thompson (1994) and Walden and Smith (1997). It is also remarkably similar to current understandings and definitions of self-regulation; indeed, the term "regulation" implies a certain control by the individual whether it is conscious or not (Saarni, 1999).

From a developmental perspective, temperament and the parent's ability to facilitate the development of regulatory capacities, for example, by helping the infant return to a calm state when distressed, have been identified as important factors in affect-regulation (Thompson, Gil, Burbach, Keith, & Kinney, 1993). Some studies have suggested that these two factors are not independent, and there is evidence indicating that mothers modulate their socialisation practices depending on their perceptions of the emotional vulnerability of their children (Fabes et al., 1994). There is also evidence of links between temperament and inhibitory control and later development of conscience and moral sensibilities (Kochanska, Murray, and Coy, 1997). While temperament is frequently regarded as a biological given, closer analysis of the way it is defined indicates considerable overlap with affect regulation (Walden & Smith, 1997). This, and the fact that it is extremely difficult to assess temperamental differences in infancy (Underwood, 1997), suggest that some caution is required when attributing differences to temperament.

In contrast to the models proposed by Eisenberg (1991) and Kochanska et al.

(1997) in which temperament is regarded as pivotal, Denham (1998) considers the contribution of parental socialisation, including modelling, contingent responding and coaching, as equally important. She proposes a model in which affect regulation is at the intersection of expressiveness, understanding and socialisation. In this model, parents explain why emotions happen, how they are experienced and how they are expressed, thus communicating the expectation that children will use their understanding to deal with their emotional experience. In addition, the commands and instructions that parents use to teach their children cultural expectations and family norms regarding the expression of emotion may also play a contributory role (Thompson et al., 1993). The socialisation hypothesis remains to be empirically verified, but there is research evidence suggesting that accepting, sympathetic, inductive and warm parenting facilitate effective emotional coping in children when distressed, whereas negative and punitive parental reactions increase distress and negativity (Eisenberg & Fabes, 1994; Fabes et al., 1990). Furthermore, parental use of problem solving was found to be negatively associated with anger in children, and parental emotion-focused responses were associated with children being able to use verbal means to cope with anger.

Saarni (1999) has delineated a number of different “coping” strategies which may be used by primary school-aged children, including problem-solving, support seeking, internalising and externalising; they also use more emotion-focused strategies such as distraction, reframing, denial, avoidance, cognitive blunting and information seeking strategies, as well as dissociation from the situation. A flexible range of affect regulation strategies is considered optimal for self-development. Furthermore, the ability to tolerate intense and distressing emotions (in order to have an opportunity to make sense of them), problem solving and recruitment of social support are all considered to be related to better self-efficacy. On the other hand, avoidance, denial and dissociation come at a high cost in the long run, they restrict children’s options, rather than expanding them as would social and problem orientated strategies.

### ***Early Developmental Issues in Affective Understanding***

Theory of mind theorists such as Melzoff and Moore (1989) argue that different emotional states are largely pre-programmed from birth. Their model assumes, as does that of Izard and Malatesta (1987) and Ekman and collaborators (Ekman et al., 1972), that different emotional and physiological states are prewired to correspond to specific emotional facial muscle patterns and expressions. There is an assumption that there is an “innate expression-to-feeling concordance” in the young infant (Malatesta, Culver,

Tesman, & Shepard, 1989). Based on Meltzoff's work on the ability of young infants to imitate certain facial expressions (Meltzoff & Moore, 1983a), they contend that when the infant imitates the emotional expression of the parent, this activates the same emotion in the infant via prewired connections. Critics have argued that this model of emotion as innately specified is limited, and does not account for how children come to appreciate the intentional aspect of emotions in others (Fonagy et al., 2002).

At present, the dominant biosocial view of emotional development sees the mother and infant as forming an affective communication system in which the mother plays a vital role in regulating the infant's affective state (Beebe, Lachmann, & Jaffe, 1997; Brazelton, Kowalski, & Main, 1974; Stern, 1984; Trevarthen, 1979; Tronick & Cohn, 1989). Researchers using micro-analytic methods to analyse face-to-face interactions have produced evidence of the bi-directional influences of behaviour and mutual regulation of affective communication between mothers and infants (Beebe & Lachman, 1988; Tronick & Cohn, 1989). A number of these researchers have identified facial and vocal mirroring of affective behaviour as central to parental regulation of affect in infants.

Gergely and Watson (1996) have proposed a social biofeedback theory of affect-mirroring in which infants learn to recognise and distinguish different affects through a special type of interaction with their parents, namely, in which the parents mirror the affective expression of their infants. He suggests that parental affect mirroring usually involves an exaggeration of the affect of the infant, which serves the purpose of marking the emotional display as being different from the real feeling of the parent. As Gergely (2002) points out, if the affect is not differentiated in this way, it might have a very different impact on the infant; he or she might attribute the emotional state, e.g., of sadness or anger, to the parent. At the same time, a high degree of contingency between the affect expressed by the parent and the emotion experienced by the infant is required for the infant to infer that the parent's expression relates to him or her. Gergely suggests that the parent's marked mirroring of affect functions in the same way as social biofeedback; it sensitises the infant to different internal emotional states. It also facilitates the development of a secondary representation of the infant's affective states, which provides him or her with cognitive means for attributing mental states to the self.

Fonagy et al. (2002) speculate that the process of internalising the marked "as if" expressions of the parent facilitate the development of a communicative code of marked expressions, which then opens up the possibility of pretend play. They also propose that contingency of the parent's response and marked affect mirroring are central to state regulation in that the contingency of the parents' affect produces a pleasant feeling of



control in the infant and soothes the infant.

### ***Learning Affective Understanding in the Family***

A number of different parent-child and family processes have been identified as having an impact on the development of children's affective understanding.

#### ***Parent-Child Talk about Emotions***

Parent-child talk about emotions, also referred to as coaching (Denham, 1998) and emotional didactics (Harris, 2000), has been identified as playing a pivotal role in the development of children's emotional understanding. Studies from at least two major laboratories have shown that it is a predictor of concurrent and later emotional understanding when measured at 24 months, 33 months, and 6 years of age (Denham, Cook, & Zoller, 1992; Denham, Renwick-DeBardi et al., 1994; Dunn & Brown, 1994; Dunn, Brown, & Beardsall, 1991). A connection has been established between parent-child talk about emotions and children's recognition of emotional expressions, as well as their understanding of emotion situations (Denham & Grout, 1992). Shipman and Zeman (1999) found a similar link in a study investigating emotional understanding in maltreating and non-maltreating environments. They reported a significant relationship between discussions indicative of a mother's emotional understanding and that of her child's emotional understanding.

Results from a recent study indicate that what may be important is not simply conversation about what someone feels, but rather the emphasis on why the person experiences specific emotions (Garner, Jones, Gaddy, & Rennie, 1997). Also of interest is the finding that parental disclosure of emotion in disciplinary encounters has been found to facilitate the development of emotional understanding (Hoffman, 1994) by evoking what has been referred to as "hot" cognitions, providing fertile ground for emotional development (Denham, 1998). Harris (2000) suggests that parental talk provides coherent narrative representations that may help children think through the implications of particular emotional episodes. Harris contends that the way in which parents organise and put together narratives about emotional episodes provides a type of scaffolding for children. This helps them to work out the psychological implications of an episode in the same way that children perform better on the false-belief task when prompted to structure events, as shown by the research of C. Lewis (1994). Harris speculates that parents who are high elaborators, that is, who request and provide richly detailed accounts of past events with adjectives and modifiers indicative of the interest and emotional significance of events, teach children to organise events into narrative

structures. These children thus benefit doubly; they learn this organising skill and they also have more opportunities to acquire a varied and elaborate stock of narratives about the causes and consequences of emotional events. The association between cooperative interactions with older siblings and children's more sophisticated emotional understanding (Brown & Dunn, 1992) have been discussed previously in Chapter 1.

### ***Parental Reactions to Children's Affect***

The way parents respond to their children's expressions of emotion, referred to as "contingency" by Denham (1998), has also been shown to contribute to the development of children's emotional understanding. Positive maternal responsiveness, i.e., reacting with happiness to displays of happiness, with calmness to anger and with tenderness to sadness has been found to predict child emotional understanding (Denham, Renwick-DeBardi et al., 1994). Not surprisingly, the opposite was also found to hold true; negative parental responses to children's emotional displays of anger and humiliation, as well as discouragement of children's expressions of emotion were found to have a negative impact on children's emotional understanding (Denham, 1998; Garner, Jones, & Miner, 1994).

### ***Parental Modelling of Emotions***

Parental emotional expressiveness, also referred to as modelling of emotions (Denham, 1998), has been found to predict children's emotional understanding (Denham & Grout, 1992; Denham, Renwick-DeBardi et al., 1994; Denham, Zoller et al., 1994). When negative emotions are expressed, the picture is more complex. Negative emotions, when expressed in a modulated way, provide children with opportunities to learn about the appropriate expression of negative emotions and thus contribute to emotion understanding. Children with mothers with a secondary negative expressiveness, such as sadness, also performed better with regard to emotional understanding. This suggests that this type of exposure, as long as it was not predominant, contribute to children's emotional understanding. At the same time, studies reflect the toxic effects of negative affect, especially where it is predominant, intense or unregulated, on the development of children's emotional understanding (Denham & Grout, 1992; Parka, Cassidy, Burks, Carson & Baum, 1992). Convergent results from a number of studies indicate that maternal anger is inversely related to children's emotional understanding (Cummings et al., 1985; Cummings, Zahn-Waxler, & Radke-Yarrow, 1981; Denham, 1998; Dunn & Brown, 1994). More specifically, children with mothers who directed considerable anger towards their children had a lower comprehension of anger producing situations (Garner, Jones, & Miner, 1994). Sadly, maternal expressiveness of negative emotions such as

anger and contempt have been found to be related to children's tendency to cover up emotions, presumably as a self-protective measure to avoid trouble with potentially explosive mothers (Bowling & Jones, 1993).

Other negative emotions, such as maternal sadness and tension, also had a negative impact on the development of emotional understanding in children, and their mastery of pro-social display rules (Bowling & Jones, 1993). This may be because these mothers are more self-involved and are less able to model suppressing displays of dislike for the sake of kindness.

### ***Fantasy Play and Emotion Understanding***

A number of studies have confirmed the link between fantasy play and emotional understanding, and individual differences in imagination and fantasy have been found to be significantly related to affective perspective taking (Astington & Jenkins, 1995; Griffin, Carlson, Taylor, & Wilson, 1997; Slomkowski & Dunn, 1992; Youngblade & Dunn, 1995) and empathy (Strayer, 1989; Strayer & Schroeder, 1989). Seja and Russ (2001) also found consistent correlations between different dimensions of fantasy play and emotional understanding; the ability to access fantasy was related to the ability to both describe emotional experiences and understand the emotions of others. Interestingly, the impact of fantasy play appears to be specific to understanding of others, and it has not been found to be related to self-understanding. Frequency of affect expression in the play of girls was also correlated with understanding of emotions in others, pointing to subtle gender differences. In line with the simulation hypothesis of Harris et al. (1989), Seja and Russ suggest that imaginative abilities as reflected in fantasy play, and possibly facilitated by fantasy play, may be important in the imaginary identifications which facilitate the understanding of the affects of others.

### ***Emotional Experience, Affective Understanding and Empathy***

Researchers such as Denham (1998) point out that children need to have experienced moderate levels of a range of emotions in order to begin to consider the causes and consequences of these emotions. She suggests that children build on the experience and understanding of their own emotions in order to understand the emotions of others, and she found that children who show more emotion, as long as the emotions were predominantly positive, were better at emotional understanding (Denham, 1986). The research findings of both Denham (1998) and Cummings (1995) suggest that children who are emotionally secure, get their emotional needs met, are generally happy, and are more likely to engage in speculations about emotions, with the converse being true for children who show considerable negative emotion. The situation is somewhat different

when it comes to negative emotions; children who rarely experienced these emotions showed more difficulties understanding similar feelings, while children who experienced a high frequency of negative emotions showed a good understanding of these feelings, but not other feelings.

Patterns of parental expressiveness with regard to emotion have also been shown to have an impact on children's social behaviour and empathy. A number of studies by Denham (1998) indicated that maternal displays of anger, as measured either in laboratory sessions or home observations, predicted less pro-social behaviour by pre-schoolers during free-play with peers. Denham concluded that consistent exposure to negative emotions in their parents is painful to young children and generally harmful to the development of their capacity to react sympathetically. Also correlated with responsiveness to peer emotions, were maternal reports that they explained their sadness and expressed their anger more rationally and in a more positive manner towards their children. Findings from other studies suggest that children who grow up in environments in which they observe parents responding in sympathetic ways to the negative emotions of others are more likely to show sympathetic concern to the distress of others (Eisenberg & Fabes, 1992; Fabes et al., 1990). Zahn-Waxler et al., 1992) conclude that children who grow up experiencing and observing empathic responses to their own and others' distress, have templates to refer to in empathy eliciting situations. On the other hand, some exposure to negative emotions in the context of generally positive parental emotions contributes to the development of empathy in children.

### ***Emotional Understanding, Maltreatment and Psychopathology***

There are still considerable gaps in our understanding of the emotional development of both children with histories of maltreatment and children with signs and symptoms of psychopathology (Greenberg, Kusche, Cook, & Quamma, 1995; Smith & Walden, 1999). Results from studies comparing maltreated and low-risk children suggest that maltreatment may be associated with deficits in basic understanding of emotions, problems in emotional regulation and poor social competence.

With regard to understanding emotional expression, there is evidence that maltreated children have difficulties posing and recognising facial expressions, especially of pure emotions (Camras, Ribordy, Hill, & Martino, 1990). Findings from more recent research indicate that differences in receptive language skills underlie the differences in emotional competence (on both facial expression cue tests and contextual cue tests) of maltreated pre-school-aged children compared to both high-risk and low-risk children

(Smith & Walden, 2001). This suggests that maltreatment affects cognitive-language skill development and that this, in turn, affects performance on emotional understanding tasks (Smith & Walden, 2001). Deficits in expressive language skills in maltreated children have also been reported in a number of other studies. Maltreated children have been found to have less developed vocabularies for describing internal states, they talk less about themselves and use less internal state language (Beeghly & Cicchetti, 1994; Coster, Gersten, Beeghly, & Cicchetti, 1989). There is also research evidence that in verbal interactions with their caregivers their responses are frequently not linked to the preceding utterance of the caregiver (Coster et al., 1989), as that they avoid verbalising negative affects (Cicchetti, 1991). In addition, they have more difficulties identifying negative emotions, especially anger, when read brief vignettes in which emotions are elicited in a target child (Rogosch, Cicchetti, & Aber, 1995).

Findings from a recent study of primary school-aged girls with a history of sexual maltreatment by their fathers or paternal figures indicated that compared with a non-maltreated sample, these girls had both lower emotional understanding and more difficulties with emotional regulation (Shipman, Zeman, Penza, & Champion, 2000). Maltreated girls were also more inclined to expect conflict in response to displays of anger and less inclined to expect support in response to sadness in the case of both parents and friends. Physical abuse has been found to have a similar negative impact on emotional understanding in primary school-aged children (Shipman & Zeman, 1999). Results from this study indicate that abusing mothers were less likely to engage in discussion about the causes and consequences of emotions, and a significant relationship emerged between maternal behaviour in this regard and children's emotional understanding.

Results from observational studies have shown that maltreated children generally display more inappropriate affect during free play, and they also have difficulties in responding appropriately to the emotional distress of peers (Haskett, 1990; Haskett & Kistner, 1991;). In general, maltreated children have been found to show either heightened levels of physical and verbal aggression with peers (George & Main, 1979; R. C. Herrenkohl & E. C. Herrenkohl, 1981; Hoffman-Plotkin & Twentyman, 1984), or avoidance and withdrawal (George & Main, 1979; Hoffman-Plotkin & Twentyman, 1984). This suggests that social contact with peers elicits stressful reactions (Lynch & Cicchetti, 1991) in children with a history of maltreatment.

### ***Impact of Parents with Psychiatric or Affective Disorders***

Results from a number of studies underscore the highly negative impact on children of growing up in environments with a predominance of negative emotion, including environments in which they are exposed to a high level of personal distress or implicated in conflict due to living with parents with psychiatric or affective disorders. These environments have been shown to induce negative emotions, as well as incapacitating guilt in children (Zahn-Waxler, Kochanska, Krupnick, & McKnew, 1990). At this stage, however, the way in which they affect emotional understanding has yet to be clarified.

Studies examining the impact of maternal depression on children reveal that at age 5 children of depressed mothers show more aggression and peer-difficulties (Denham, Zahn-Waxler, Cummings, & Iannotti, 1991; Zahn-Waxler et al., 1988). Furthermore, the results suggest that these children develop particular types of problems such as over-regulating and suppressing negative emotions, and when they are eventually expressed, they have difficulty regulating them. It has also been observed that though children of depressed mothers tend to be exceptionally well behaved when involved in experimentally induced situations of escalating conflict, they actually get more upset and remained preoccupied with the situation. They also tend to inhibit frustration and use politeness, comforting and appeasement more often than other children (Cummings et al., 1985; Denham, Zahn-Waxler et al., 1991; Zahn-Waxler, Cummings, McKnew, & Radke-Yarrow, 1984).

### ***Early Development of Emotional Understanding***

There is converging evidence that already in the first year of life infants are tuned in to different emotional expressions of adults (Bretherton et al., 1986; Campos, 1983; Klinnert, Emde, Butterfield, & Campos, 1988; Sorce, Emde, Campos, & Klinnert, 2000; Stenberg, Campos, & Emde, 1983). One-day-old infants seem to be able to distinguish between happy and sad faces (Field et al., 1990). At 5 months, they are able to differentiate sad, happy and angry vocalisations, and they are also able to match faces and affect based on congruence (Walker, 1982). They react appropriately to the emotional content of praise or prohibition (Fernald, 1993), and they react negatively to depressed affect in their mothers (Tronick & Gianino, 1986). In addition, there is evidence that infants use the emotional expression of parents, a phenomenon is referred to as "social referencing" and which appears during the period from 10 to 12 months of age, to regulate their behaviour when they are in new or potentially threatening situations

(Campos, 1983). More specifically, it has been shown that infants look at their parents and will only proceed to interact with a stranger, cross a visual cliff or touch new toys if the emotional expression of the parent is positive (Feinman, 1991).

A review of research findings has identified a number of striking changes in mother-infant interaction starting at around 9 months of age, including shared referencing, an increasing ability to understand maternal instructions and intentional communication (Bretherton et al., 1986). Studies also show that from age of two, children comfort victims who display distress (Zahn-Waxler, Radke-Yarrow, & King, 1983). On the basis of this evidence, Bretherton et al. conclude that there is ample evidence that by the time children begin to talk about emotions, they already have an understanding of themselves and others as experiencing emotions. Studies by Bretherton and Beeghly (1982) using maternal diaries also suggest that: 1) the use of emotion words can start as early as 18 months of age and that by 28 months of age the majority of children use at least some emotion words when expressing themselves or referring to others; 2) some 24-month-olds talk about the causes of emotions, their consequences, or related mental states; 3) babies and toddlers have been observed to play “emotion games” in which they elicit behaviours in their mothers; and 4) between 2 and 3 years of age children begin to attribute emotions to others in pretend play.

In addition, data collected on language production in a small group of children aged between 2 and 5 years indicate that even 2-year-olds can talk systematically about emotions (Wellman et al., 1995). Harris (1989) points out that at least half of the emotion references made by 2-year-olds concern past, future and recurrent feelings, but he concludes that they are still largely descriptive. Others have argued that at this age children already use emotion talk instrumentally in order to guide, change or elicit behaviour in others (Bretherton et al., 1986; Dunn, Brown, Slomkowski et al., 1991; Wellman et al., 1995). Results from an observational study in day-care centres (Fabes et al., 1991) have provided further support for this argument in that children as young as 3 years old provided relatively accurate reports of emotions and their causes when they observed incidents in which peers expressed emotions of happiness, sadness, distress or anger.

### ***Labelling Emotional Expression and Understanding Emotional-Eliciting Situations***

The comprehension of facial expressions of emotion is considered to be the perceptual bedrock on which subsequent understanding of emotions is founded (Denham, 1998). A number of studies have confirmed that children’s abilities to identify emotions

both verbally and non-verbally, whether presented in drawings (Camras & Allison, 1985; Denham & Couchoud, 1990), in photographs (Field & Walden, 1982) or in person (Felleman, Barden, Carlson, Rosenberg, & Masters, 1983), are well established by the end of the pre-school period. Furthermore the acquisition of these abilities is progressive; children are able to identify happy faces first, and then gradually learn to differentiate negative emotions such as anger, fear and disgust (Camras & Allison, 1985; Denham & Couchoud, 1990). Studies suggest that children first retain mouth expressions, such as smiles of happiness, followed by eye expressions and nose expressions.

An understanding of the types of situations that elicit specific emotions apparently develops in parallel with an understanding of emotional expressions; in addition, it has been shown that children have relatively more difficulty understanding negative emotions (Denham, 1998). Fear appears to present a challenge to pre-school children who have more difficulty both in identifying it and understanding the situations in which it is evoked. These difficulties are thought to be related to the complex eye, brow and mouth movements involved (Denham, 1998), but the factors underlying children's difficulties in identifying the situational triggers seem more complex than this. Pre-schoolers seem more likely to consider imaginary creatures such as monsters and witches when asked about situations causing fear (Lieberman, 1993), and respond with reality based triggers that adults might consider as inducing fear, when asked about situations in which they may feel sad.

### *Understanding the Causes and Consequences of Emotions*

A number of studies have confirmed that although 3-year-olds give idiosyncratic reasons for emotions, this is not true for 4-year-olds and 5-year-olds (Denham & Zoller, 1991; Fabes et al., 1991). In general, Dunn and Hughes (1998) found that the explanations that pre-school children give for their own emotions are more complete than when they explain the emotions of parents, siblings and peers.

Interestingly, pre-school children seem to find it easier to understand the causes of negative emotions than happiness and sadness in peers (Dunn & Hughes, 1998; Fabes et al., 1991). By the time they are 5 years old, children are more likely to consider personal dispositions and they provide more abstract accounts of the possible causes of a peer's emotions, rather than identifying causes primarily in terms of goal states (Dunn & Hughes, 1998; Fabes et al., 1991; Strayer, 1986). Girls and boys appear to have somewhat different foci in the way that they think about the causes of emotions, with girls being more likely to give explanations involving interpersonal aspects (Fabes et al., 1991;



Strayer, 1986).

With regard to understanding the causes of parents' emotions, Denham (1998) found that 4-year-olds and 5-year-olds were able to identify the causes of a variety of parental emotions, as assessed verbalisations and actions occurring during a semi-structured dollhouse play interview. The method of assessment seems critical here in that direct verbal questioning used by Dunn and Hughes (1998) produced significantly more "don't know" responses than in play based interviews such as the dollhouse interview used by Denham. Also of interest is the finding that boys, but not girls, were more likely to regard themselves as the cause of their mothers', but not fathers', emotions. Denham (1998) concluded that pre-schoolers generally had a fairly solid understanding of the consequences of emotions in themselves and in others.

### *Understanding Mixed Emotions*

With regard to understanding ambivalence and mixed emotions, Harter (1999) has argued that it is only at the age of 7 that children start showing an understanding of others' differing emotions, and even then they are only able to consider emotions having the same valence, such as anger and sadness. Furthermore, it is only at the age of 11 that children start to understand that someone can have emotions of opposite valence towards the same person, for example, being angry at their mother when she imposes a time restriction, while also acknowledging that they still love her. Other studies using methodologies that provide more scaffolding suggest that this is only partly true. Wintre and Valence (1994) used an abacus-like frame with different emotions such as happy, sad, angry, scared and loving to explore when it is that children begin to consider mixed emotional reactions. They found that at age 5 children were able to imagine having different emotions, but only of the same valence and intensity. At age 6, children were able to consider multiple emotions of the same valence and of different intensities as being possible response to a specific emotional stimulus. At age 8, which is considerably earlier than predicted by Harter, their responses reflected an ability to consider that multiple emotions of different valences and intensities could follow from a particular emotional stimulus.

Another method used to explore the emergence of mixed-emotion understanding involved telling the story of a child who was looking for a lost pet and who finds his pet, which is injured (Peng, Johnson, Pollock, Glasspool, & Harris, 1992). The children were presented with the mixed emotions in that they were told that the child was happy to find the pet, but sad that it was injured. Children were then asked to describe how the child

felt. The results indicated that 6 to 7-year-olds agreed that the child in the story could feel emotions of different valences, but that 4 to 5-year-olds were unable to consider this possibility.

As to the reasons why younger children have so much difficulty with mixed emotions, Denham (1998) points out that younger children think quite concretely about emotions and tend to rely on facial expressions (“faces can’t go up and down at the same time”). Their limited ability to understand mental processes and the lack of sophistication of their theory of mind (“you can’t think two ways”) have also been identified as possible obstacles (Harris et al., 1989).

### *Self-Understanding*

From a cognitive perspective, Wellman and Woolley (1990) have observed that it is during the primary school years that children begin to display the capacity to talk about their own thoughts and to increasingly to think about themselves in mental state and trait terms rather than principally in terms of their physical attributes, abilities and context. Harter’s (1999) research indicates that these shifts are apparent in children’s self-representations and she sees the latter as linked to their growing capacities to form higher order generalisations based on their behaviour, performance and interpersonal relations. This is in line with Damon and Hart’s (1988) findings that up to the age of 7 years, the self tends to be perceived in terms of physical characteristics and favourite activities. From a Piagetian perspective, the concrete, ability-specific conceptions of the self of young children are explained in terms of their lack of mental sophistication and their inability to view themselves in global integrated terms. The evidence suggests that age 8 marks a transition from a concrete to a more psychological self, with children becoming able to explicitly compare their own attributes and abilities with those of others (Harter, 1999). They also become increasingly able to see their qualities as mixed, and while this may protect them from all out negative self-evaluations, their growing critical abilities create new challenges to their self-esteem. Kovacs (1986) suggests that it is not until adolescence that a psychological awareness and capacity to self-reflect are developed, and the various dimensions of the self are integrated into a stable personality characterisation.

### *Emotional Understanding, Social Competence and Empathy*

The relationship between emotional understanding and social competence, as well as between emotional understanding and prosocial reactions to the emotions of others, has been underscored by results from many studies (Denham, 1986; Denham & Couchoud,

1990; Denham, McKinley, Couchoud, & Holt, 1990; Field & Walden, 1982; Gnepp, 1989). This is the case regardless of whether researchers focus on emotional understanding of situations (Gnepp, 1989), the ability to identify facial expressions of emotions (Field & Walden, 1982), aggregates of comprehension of emotional expression, or emotion expressive and receptive labels (Denham, 1998).

Interestingly, young children's emotional responsiveness to the distress of others has been found to be predicted by a particular type of complex emotional understanding which is referred to as emotional role taking and defined as the "ability to be open to and recognise the unique emotional cues generated by the individual in a particular situation" (Garner, Jones, & Palmer, 1994, p. 910). Results from two other studies indicated that both emotional situation knowledge and emotional role-taking abilities predict preschoolers' abilities to remain positive in spite of disappointing circumstances (Garner & Power, 1996), as well as lower levels of aggression (Arsenio & Lover, 1997). There is also evidence suggesting that emotional understanding facilitates the development of moral sensibility, even after considering the effects of intelligence and verbal ability. Results from a longitudinal study by Dunn, Brown and Maguire (1995), showed that children's abilities to identify emotional expressions and emotional situations at 40 months were related to indexes of empathy and reparative story completion in kindergarten, and understanding of emotional ambivalence in kindergarten again predicted empathic reactions in grade 1.

How does understanding of one's own emotions fit into this picture? The development of children's understanding of their own affects and self-understanding has been surprisingly neglected. A study by Parke et al. (1992) addressed this question by investigating a range of domains related to children's understanding of their own emotions. The results indicate that peer acceptance and prosocial behaviour are predicted by children's ability to identify emotions and understand the circumstances evoking their emotions, as well as their understanding of the reactions of others to their own emotions. Moreover, this association remained robust even when the contributions of parental emotional expressiveness as assessed at home and in laboratory situations were taken into account (Cassidy, Parke, Butkovsky, & Braungart, 1992; Parke et al., 1992)

### *Affective Understanding and Psychopathology*

Much of the developmental research reviewed focuses on normal trajectories in the development of emotional understanding, and much less is known about the development of child psychopathology. There is some evidence of an association between

delays in affective understanding and disturbances of affect (Walker, 1981) and behaviour (Cook et al., 1994) in children. There is also evidence that distorted appraisal contributes to conduct disorder (Dodge, Murphy, & Buchsbaum, 1984); conduct disorder is thus not simply a matter of a lack of emotional understanding. Learning theories (Fester, 1973) in which lack of opportunities to acquire social skills are seen argued to contribute to depression and conduct disorder, could fit well with the deficit in emotional understanding model. Other cognitive psychological accounts of childhood depression (Beck, 1974) and conduct disorder (Kazdin, 2000) are expressed in terms of disturbances in appraisal. The question is whether difficulties in affective understanding contribute to distortions in appraisal processes. Beck's theory of depression as involving distorted attributions involving self-blame and generalisation of negative expectations are more difficult to explain using a simple emotional understanding model.

Greenberg, et al. (1995) have proposed an integrated affective-behavioural-cognitive-dynamic (ABCD) model of development. This model is based on the assumptions that the majority of affective response systems have become automatic before children begin to use language, and that difficulties in emotional understanding and regulation contribute to social competence and personality development. They identify both accurate appraisals of situations and social-cognitive strategies for dealing with difficult emotional situations as being important during the primary school-age years. Furthermore, they have designed a curriculum, the PATHS preventative intervention, with the aim of teaching children these skills, and they have reported promising findings, although it is not clear how this curriculum influences appraisal processes. The intervention focuses on increasing children's ability to discuss emotions and on improving their emotional vocabulary, as well as on understanding meta-cognitive aspects of emotions such as awareness of emotion cues and display rules, mixed emotions and changing emotional states.

Interpersonal cognitive problem-solving skills training (PSST) has also been reported to be effective with children presenting with conduct disorder (Kazdin, 2002). This intervention is designed at providing children with a step-by-step framework for responding to social difficulties. It involves teaching self-statements that direct the child's attention to certain aspects of the problem and the solution, thus fostering pro-social behaviour. Structured tasks, games, role-play and stories are used and the therapist models the solution with the child.

In summary, the research on the development of affective understanding reviewed here points to social and familial interactions as providing the context crucial to

children's learning about affects: 1) parental attributions of intentionality to infants and their capacity to both recognise infant affect of infants and mirror it with a particular markedness are seen as central to the development of the understanding of emotions within the self; 2) parent-child discussions of emotions, and the quality and elaborateness of these narratives are seen as playing a central role in facilitating children's affective understanding as well as self-understanding; 3) parental expressiveness and the valence of parental affect is seen as having an important impact on the development of children's affective understanding; 4) pretend play and role play are seen as contributing to the capacity to understand the affective reactions of others; 5) interactions with siblings, peers and older adults are seen as providing further opportunities for children to develop their understanding of affect, and the acquisition of this ability is also seen in part as depending on the child's temperament as well as motivation to become effective in the social world; and 6) parental negative affect, psychiatric illness and abuse and neglect have been shown to have negative implications for the development of children's affective understanding.

In the section that follows, the attachment paradigm for understanding children's emotional development will be introduced. According to attachment theory, interpersonal processes make an important contribution to development, but emphasis is placed on the early mother-infant relationship. Some researchers, such as Dunn (1993), have been critical of what they consider to be an overemphasis on attachment relationships in explaining the development of affective understanding. On the other hand, the findings of H. Steele, M. Steele and Fonagy (1996) provide longitudinal evidence suggesting that parental reflective functioning and child attachment security are implicated in the development of children's emotional understanding and thus merit further consideration. In the section that follows, the focus will first be placed on attachment theory and research, and then on the closely related concept of reflective functioning.

### **Attachment and Reflective Functioning**

The question inevitably arises as to how theory of mind relates to attachment, both conceptually and empirically, given that these are amongst the most influential models in the field of the development of mentalisation in childhood. The preceding reviews of the literature on theory of mind and affective understanding indicated that theorists are divided when it comes to deciding whether it is biological maturational or social-familial processes that drive the development of mentalisation. Researchers in favour of the latter processes broadly agree that mentalisation develops in relationships. At the same time,

there is considerable diversity with regard to the centrality attributed to early relationships and with regard to the emphasis placed on affective bonds and affective communication in the development of theory of mind. Those who adopt social-functionalist and social-learning positions such as Dunn (1994) and Astington (1994), focus on the period after infancy and tend to consider social learning within the family and society as the mechanism through which children acquire theory of mind. From this perspective the early attachment relationship is seen as less important in the development of theory of mind than other factors such as emotion-focused discussions by parents. Theorists such as Bretherton (1991) consider the infant-caregiver interaction and the caregiver's ability to attribute intentionality to the infant's pre-intentional behaviour as at the root of the development of intentionality and theory of mind. This perspective overlaps and integrates easily with the attachment model, as will be discussed below. From this perspective, working models of relationships are seen as influencing interpersonal understanding, and meta-cognitive development is seen as closely linked to secure early relationships.

A number of seminal thinkers in both developmental and cognitive psychology, and in psychoanalysis, have made the link between the quality of the mother-infant relationships and the emergence of symbolic thought. Bretherton, Bates, Benigni, Camaioni, and Volterra (1979) consider the harmoniousness of the mother-child relationship as facilitating the development of symbolic thought. Considerably earlier, Bion (1962a, 1962b) introduced a particular conceptualisation of "containment" as involving mental rather than physical processes. From this perspective, the mother's thinking about the unmentalised experience of the infant is seen as crucial to the development of the infant's capacity to transform experience into something which can be thought about or known. But is there empirical evidence that the quality of the early mother-child relationship provides the foundation on which children build the ability to discover their own minds and understand that of others? In the review that follows, attachment theory and research will be introduced with the aim of reviewing the current state of knowledge with respect to this question.

### ***Theoretical and Historical Background***

Bowlby's attachment theory caused a dramatic shift in the way we think about the importance of the early mother-child relationship in the formation and organisation of the self, and also in the development of the individual's characteristic styles of interaction and perception of others (George & Solomon, 1999). The mother is seen to function as a

psychic organiser, and if she is unable to fulfill this role during a critical period, this is considered to result in maladaptation of the child's self-regulatory abilities. Bowlby arrived at the concept of attachment after rethinking psychoanalytic theories of mother-infant relationships in light of new ethnological findings suggesting that this relationship is evolutionarily determined, genetically driven behavioural system. His trilogy "Attachment and Loss" (1969, 1973, 1980) integrates concepts from ethology, systems theory and cognitive psychology and is based on three core constructs: behavioural systems, representations and defensive exclusion. Operating from an evolutionary perspective, he argues that the attachment behavioural system developed so as to increase the chances of survival of the young of the species by keeping them in close proximity to caregivers who would protect them.

### *Development of Internal Working Models*

The notion of an internal working model, first used by Craik (1943) in trying to conceptualise the underlying systems required for intelligent problem solving, appealed to Bowlby more than did terms such as representation or image because of its dynamic and functional connotations. In Bowlby's model (1973), the infant gradually builds up patterns of expectancy based on the accessibility and responsiveness of the caregiver, until at some stage these become consolidated into internal working models or representational models involving complementary representations of the self and the attachment figure. These models reflect the child's experience of the self as acceptable and worthy of care, as well as the caregiver's availability, desire and ability to provide protection and care. They are seen as not only guiding appraisal processes and responses to future behaviour, but also as operating outside of conscious awareness; they are therefore difficult to access for reflection, evaluation, and change.

To account for certain phenomena associated with psychopathology, Bowlby (1973) introduced the notion of multiple models that are incompatible and contradictory, and that are kept segregated through defensive exclusion. Children, who feel loved and protected, and who see their caregivers as capable and willing to provide love and protection, have representational models of self and others that are compatible and well aligned. When children feel unloved and unwanted and when they have experienced their caregivers as rejecting or incapable of providing care, this may result in multiple and conflicting representations of self and others, because the child struggles to protect himself against negative appraisals of the self and other. When the child experiences what Bowlby refers to as "assaults on the attachment system", i.e., when the child's

attachment system is chronically activated and not responded to, or is responded to with punishment or ridicule, defensive exclusion may become dominant and severe. In these cases, a potentially pathological type of exclusion takes place, resulting in what Bowlby refers to as “segregated systems” in which the attachment information is kept out of consciousness. When memories and feelings are triggered by attachment relevant cues, this may result in attachment behaviour that is dysregulated, irrational, unpredictable and out of control, or completely blocked.

### *Attachment Styles in Infancy and the Strange Situation*

Ainsworth’s development of the “Strange Situation” (Ainsworth, Bell, & Stayton, 1971) provided attachment theory with a laboratory based research methodology that enabled investigators to test attachment theory empirically; this has stimulated prolific research which in turn has contributed to further theory building. This method involves a 20 minute procedure in which exploratory and attachment behaviour is assessed in the context of a laboratory imposed situation designed to activate the attachment system (Ainsworth, 1982). The reaction of the infant when reunited with his mother, his capacity to use her to regulate his distress and his subsequent ability to return to exploratory play are seen as indicative of the expectations he has developed regarding his mother’s physical and emotional availability.

Based on a systematic analysis of both exploratory and attachment seeking behaviours and the interactions which take place after the reunion episode, Ainsworth (1982) developed a classificatory system that identified three distinct patterns associated with attachment styles and behaviours observable at the end of the first year of life. Securely attached infants are ready to explore in the presence of the mother, less so in her absence, and are prompt to seek positive contact with her when she returns. They are quick to respond to comfort and readily resume exploration of the toys provided. Although there is some variation across samples, approximately 55-65% of infants in low-risk non-clinical samples displayed behaviour indicative of secure attachment (van IJzendoorn, 1992).

The second and third groups are both considered as showing insecure or anxious attachment, but use different strategies to organise their behaviour relative to the caregiver. Avoidant infants tend to maintain exploratory behaviours and appear unperturbed when their mothers leave, and they ignore her when she returns. Bowlby (1988) interpreted this avoidance as indicating that even at this early age, these children no longer reveal their deepest feelings to the caregiver, nor their equally deep desire for



comfort and proximity. Fearfulness, hostility and dependency are no longer expressed, thus it may be assumed that psychological defenses are already present. Research with low risk, non-clinical samples indicates that 20-30% of infants display avoidant attachment styles (Main, 1995a). Ambivalent or resistant infants tend to be fearful of the stranger. Intensely upset by the separations they are highly focused on but also ambivalent towards the mother when she returns; they express first a desire for closeness and then anger in quick succession, and thus are difficult to soothe. They cling to their mothers and resist being put down, and they are also slow to return to play. In low risk, non-clinical samples, approximately 5-15% of infants display ambivalent attachment patterns.

Through naturalistic observations of parents and children at home, Ainsworth (1982) has linked these three groups of reactions to the quality of mothering that infants received during the first year of life. Infants with a secure attachment had mothers who were contingently responsive and accessible, and who were able to read their babies signals and respond to them in a sensitive and consistent way. They were accepting and responsive when their infants showed a need for closeness and contact. Infants with an avoidant attachment style had mothers with a restricted range of emotional expression and who showed a dislike of physical contact. They frequently ignored and failed to respond to their infants' attempts to be physically close or comforted; they avoided cuddling and held and carried their babies less comfortably than did other mothers. Infants with ambivalent attachment tended to have mothers who were erratic and inconsistent in providing physical comfort; they tend to provide it in response to their own needs, rather than those of the infant. In addition, they tended to be interfering and intrusive. The infant's anger towards the mother may be understood as the expression of frustration and dissatisfaction due to their inconsistent handling.

Main and Solomon (1986) subsequently made the landmark discovery of an other attachment style, that of disorganisation when they observed a group of infants who were difficult to classify using Ainsworth's three category attachment classification system (1982). They noted that these infants behaved in a disorientated or disorganised way when reunited with their mother in the Strange Situation, as evidenced by contradictory and conflicting behaviours such as turning in circles, approaching and then avoiding their mothers or approaching her with the head averted. In contrast to the secure and insecure groups previously described, what seemed to characterise the attachment behaviour of these difficult to classify infants was the absence of a consistent, organised pattern of response to separation and reunion. Fear has been identified as playing a central role in

the aetiology of attachment disorganisation, and Main and Hesse (1990) suggest that the disorganised behaviour of these infants can be traced to frightening and frightened behaviour on the part of the caregiver. The rapidly growing body of research in this area suggests that the organised-disorganised distinction is more relevant to psychopathology than is the secure and insecure distinction, but a further discussion of this falls outside the scope of this thesis.

### ***Caregiver Sensitivity and Other Determinants of Security of Attachment***

Bowlby (1969) stressed the importance of determining the antecedents of different attachment styles and he considered maternal sensitivity in responding to the baby's signals as playing a central role in this regard. Results from the classic Baltimore study carried out by Ainsworth and her colleagues (Ainsworth, Blehar, Waters, & Wall, 1978) provided strong support for this hypothesis. They identified maternal sensitivity, acceptance, cooperation, and accessibility as closely linked to attachment security. Ainsworth defined maternal sensitivity as the capacity and willingness to 1) perceive the infant's communications as reflected in his behaviour, emotional expressions, and vocalisations; 2) interpret them from the infant's point of view, and; 3) respond to them promptly and appropriately based on the infant's developmental and emotional needs.

Subsequent studies (Belsky, Rovine, & Taylor, 1984; K. E. Grossmann, K. Grossmann, Spangler, Suess, & Unzner, 1985; Isabella, 1993) have yielded results generally supportive of the central role of maternal sensitivity in the development of attachment security. Researchers such as Bretherton (1985), Main (1990) and Sroufe (1988) have nonetheless continued to consider maternal sensitivity as being critical to the development of attachment security. Others have been more sceptical about the evidence that maternal sensitivity plays a role in attachment security (Lamb, Gaensbauer, Malkin, & Shultz, 1985). An initial meta-analysis of studies on attachment and sensitivity (Goldsmith & Alansky, 1987) concluded that the predictive effect was much weaker than once believed. A more recent meta-analysis (De Wolff & van IJzendoorn, 1997) has more or less put the debate to rest; it indicated that sensitivity plays an important, but not exclusive, role in the development of attachment security. At the same time intervention studies aimed at facilitating maternal sensitivity towards infants with difficult temperaments reflect an impressive effect size of .48 (van IJzendoorn, Juffer, & Duyvesteyn, 1995), suggesting that maternal sensitivity can make a crucial difference in socially disadvantaged groups.

The relationship between sensitivity and attachment has been found to be weaker

in samples of younger infants. The results suggest that the development of attachment can easily change course when family life circumstances, child rearing arrangements or maternal sensitivity change (De Wolff & van IJzendoorn, 1997). The relationship between sensitivity and attachment was also found to be weaker in disadvantaged families and clinical samples, suggesting that contextual stresses can override the contribution of maternal sensitivity or impact on it in a number of ways. Findings from other studies suggest that social variables (Cummings & Davies, 1994) and the impact of social context and clinical conditions (Belsky & Cassidy, 1994; Sameroff & Chandler, 1975) need to be considered together with parental sensitivity.

### ***Infant Factors in the Development of Attachment Security***

What role do infant factors such as genetics and temperament play in the development of attachment security and organisation? Results from a wide range of studies indicate that maternal factors such as the mother's perception of the baby appear to be generally more important than any specific infant factors in the development of attachment security (Egeland & Farber, 1984; Pianta, Marvin, Britner, & Borowitz, 1996). There is also evidence from primate laboratory studies that maternal factors outweigh the impact of infant factors (Suomi, 1995). These studies show that when temperamentally reactive or behaviourally inhibited infant monkeys were reared by highly nurturing foster mothers, they develop secure relationships, whereas they develop insecure attachments with punitive foster mothers. An exhaustive review of research to date has failed to find evidence that temperamental factors, such as emotional reactivity, psychomotor arousal levels, and capacity for regulation, have a direct influence on infant attachment security (Vaughn & Bost, 1999). Studies also indicate that genetic factors do not appear to play as important a role in the development of attachment security whereas in cognitive development they explain over 50% of the variance (De Wolff & van IJzendoorn, 1997). The findings that infants frequently develop different attachment styles vis-a-vis mothers and fathers can also be interpreted as further evidence that attachment is a characteristic of the dyad, rather than a function of infant temperament or genetic factors.

### ***Adult Attachment and the Move to the Level of Representation***

The development of the Adult Attachment Interview (AAI: George, Kaplan, & Main, 1985; Main, Kaplan, & Cassidy, 1985) was another seminal step in attachment research, as it provided a method for classifying attachment at the level of representation,

rather than at behaviour level thus allowing for the study of attachment beyond infancy. When Main, working with George and Kaplan, asked parents to talk about their early experiences with their own parents, they found that the narrative styles of the stories, which the parents produced in the context of this semi-structured interview, were correlated with the attachment security of their infants. The AAI has been widely used by researchers because of its unique ability to predict infant attachment classification, even before the birth of the infant. This remarkable finding that the AAI classification of the parent predicts not only the attachment style of the infant, but also the exact attachment style that the child manifests in the Strange Situation, has been demonstrated in at least 14 studies (van IJzendoorn et al., 1995).

The AAI interview repeatedly asks for descriptions and evaluations of early relationships with each parent, a technique that has been described as “surprising the unconscious”. The AAI essentially evaluates the impact of the individual’s “current state of mind with respect to attachment” (Main & Goldwyn, 1991) on his ability to search for early memories and to recount his early attachment experiences while, at the same time, providing a coherent, collaborative discourse without inconsistencies and contradictions (Main, 1995b). Coherence, the most important factor overall in classification, has been found to be the best predictor of infant attachment organisation (Main, 1995c). Main and Goldwyn (1991) found that the search for memories can lead to incoherence and to characteristic types of breakdown in discourse and thus to violations of Grice’s four maxims of conversation (Grice, 1975) pertaining to quality, quantity, relation and manner. Distinct types of violations have been found to be associated with different attachment classifications, with dismissing individuals violating the maxims of quantity and quality, and preoccupied individuals violating those of quantity and manner. As Siegel (1999) puts it, “...it is here that the AAI offers a unique perspective on the relationships among attachment, memory and narrative” (p. 79).

Main (1995b) identified analogues of infantile attachment patterns in adulthood as a function of the coherence of the attachment narratives; the AAI coding system thus yields attachment classifications that correspond to the infant attachment patterns observed in the Strange Situation paradigm (Ainsworth et al., 1978). Adults with a secure and autonomous attachment style value attachment, as reflected in their narratives which are relatively objective about specific events and relationships, as well as coherent and plausible regarding both favourable and unfavourable life experiences. Adults with a dismissing attachment classification which corresponds to the avoidant classification of infancy, generally provide accounts that are somewhat dismissive of their attachment

experiences and relationships. They tend to normalise negative childhood experiences and may be somewhat idealising or devaluing. They emphasise their self-reliance and frequently appear emotionally restricted. Those with ambivalent-preoccupied classifications, corresponding to the ambivalent-resistant infant classifications, show preoccupation with past attachment relationships and experiences and often seem confused and overwhelmed. They tend to produce long, entangled histories with run-on sentences and pseudo-psychological explanations. They may also show preoccupation of an angry, passive and sometimes fearful nature with traumatic events related to attachment. Those with an unresolved attachment classification, matching the disorganised classification of infancy, show unusual lapses, as described previously, in their discussion of loss or abusive experiences. For example, they may speak of a dead person as if they were still alive, or may launch into eulogistic speech like that of a priest or orator, rather than a son or daughter.

A plausibility scale was added to the AAI after Main (1991) became aware of the presence of what appeared to be failures in meta-cognitive monitoring in the narratives of parents of infants with disorganised and disoriented attachment behaviour. Although the Gricean maxims are not violated, failures in meta-cognitive monitoring include highly implausible statements regarding the causes and consequences of events such as loss, e.g., magical causality in the case of death or statements suggesting that the dead person is still thought of as being alive. Both the approach used in the AAI interview and the coding system where attachment style is seen as revealed in the coherence of the narratives about attachment relationships, were influential in terms of the development of the Child Attachment Interview (CAI: Target et al., 2000) and the Child Reflective Functioning Scale (CRFS: Target et al., 2001) used in the present thesis.

### *Stability of Attachment*

With regard to the long-term stability of attachment patterns, the literature reflects a complex picture. Infant attachment security has been found to predict positive interactions between parents and children in the short term (Slade, 1987) and some studies have reported remarkable stability in attachment style over many years (Main & Cassidy, 1988; Wartner, Grossmann, Fremmer-Bombrik, & Suess, 1994). Results from other studies have not confirmed this picture of stability (K. E. Grossmann, K. Grossmann, & Zimmermann, 1999), and suggest that associations cease to be direct after 6 years of age (K. E. Grossmann & K. Grossmann, 1991). This has led to the conclusion that while developmental history and attachment experiences are important, subsequent

experiences can significantly affect attachment security (Sroufe, Egeland, & Carlson, 1999). At this stage, relatively little is known about the factors underlying continuity and change in attachment patterns (Thompson, 1999).

### *Attachment and Psychopathology*

A large body of research investigating the links between early attachment and a range of characteristics, such as cognitive capacities, interpersonal abilities and psychopathology, has accumulated, and the findings do not reflect the direct relationship initially suggested by Bowlby. With regard to social adaptation and personality development, a complex picture emerges. In the Minnesota Parent Child Project early attachment security was found to be associated with self-esteem, emotional health, agency, compliance and positive affect; this association was found to still be evident at age 10 (Elicker, Englund, & Sroufe, 1992; Weinfield, Sroufe, Egeland, & Carlson, 1999). Infant attachment security also predicted a number of personality features, the risk for adolescent anxiety disorders (Warren, Huston, Egeland, & Sroufe, 1997) and adult psychiatric morbidity (Carlson, 1998; Weinfield et al., 1999). Other studies have not been able to replicate these findings and Belsky and Cassidy (1994) have concluded that the relationship between attachment and later behaviour is modest or weak.

A re-examination of these studies have led to the conclusion that insecure attachment interacts with risk factors and is more likely to be associated with psychopathology in high-risk than in low risk samples. Support for this conclusion comes from two studies involving high risk samples; these studies found that early attachment disorganisation or disorientation is a vulnerability factor which, when combined with other risk factors, and contribute to externalising problems, especially aggression (Lyons-Ruth, 1996; Shaw, Owens, Vondra, Keenan, & Winslow, 1996; Shaw & Vondra, 1995).

With regard to adult psychopathology, there is evidence suggesting that attachment security is a protective factor associated with lower anxiety (Collins & Read, 1990, 1994), lower hostility, increased resilience (Kobak & Sceery, 1988) and the capacity to regulate affect through interpersonal relatedness (Simpson, Rholes, & Nelligan, 1992; Vaillant, 1992). Insecure attachment, on the other hand, has been found to be a risk factor associated with a greater degree of depression (Armsden & Greenberg, 1987), anxiety, hostility and psychosomatic illness (Hazan, 1990).

### *Attachment and Social Adaptation*

In the Bowlby-Ainsworth model, early attachment relationship styles are seen as providing the templates for subsequent social and intimate relationships, but the question remains as to whether or not there is empirical evidence that attachment is associated with interpersonal competence. Results from some studies show that secure children have better sibling relationships (Teti & Ablard, 1989; Volling & Belsky, 1992), and also better relationships with teachers and counsellors during the pre-school period and at age 10 (Weinfield et al., 1999). However, findings from other studies are inconclusive (Berlin, Cassidy, & Belsky, 1995; Howes, Hamilton, & Matheson, 1994; M. Lewis & Feiring, 1989; Youngblade & Belsky, 1992).

In general, disorganised attachment appears to be a risk factor for maladaptive behaviour (Jacovitch & Hazen, 1999; Lyons-Ruth, Easterbrooks, & Cibelli, 1997). A meta-analysis of two longitudinal studies by van Ijzendoorn, Schuengel, and Bakermans-Kranenberg (1999) reported an association of .55 between disorganised attachment and controlling attachment behaviour in middle childhood. Furthermore, observational studies of peer relations suggest that disorganised children were less competent in play and conflict resolution (Wartner et al., 1994) and did not have a consistent relational model with different peers (Jacovitch & Hazen, 1999). Links between disorganised controlling attachment and aggression have been found in both longitudinal (Goldberg, Muir, & Kerr, 1995; Hubbs-Tait, Osofsky, Hann, & Culp, 1994; Lyons-Ruth, 1996; Lyons-Ruth, Alpern, & Repacholi, 1993; Shaw et al., 1996) and cross-sectional studies (Geenberg, Speltz, DeKlyen, & Endriga, 1991; Moss, Parent, Gosselin, Rousseau, & St-Laurent, 1996; Moss & St-Laurent, 1999; Solomon, George, & Dejong, 1995).

### *Pathways of Attachment from Infancy to Adulthood*

As the preceding review indicates, there is sufficient evidence of continuity in early attachment organisation to warrant explanation. The ample evidence of the impact of attachment organisation on character, interpersonal relations and psychopathology also warrants explanation. Three possible explanations of this evidence have been proposed by researchers and will be summarised below.

The first explanation is that of continuity in the social environment and quality of care. The association between early care that is neglectful or openly hostile and later difficulties in functioning is argued to be more a function of the long term exposure to generally harmful caregivers and environments, rather than a function of early

compromised care (Belsky, 1999; Lamb et al., 1985; Thompson, 1999). This explanation does not hold up under the evidence provided by adoption studies that profound early privation has an enduring impact, even when circumstances change radically after children are adopted (Chisolm, 1998; Fisher, Ames, Chisholm, & Savoie, 1997; Hodges & Tizard, 1989). Results from a study of UK Romanian adoptees indicated that length of early privation is associated with long term disturbances in attachment and peer relationships, and in attention regulation and cognition; this study also showed that attachment disturbances remained unchanged by age 6 (O'Connor, Rutter, & Kreppner, 2000). The number of securely attached children was also lower than would be expected based on IQ and social class, and it was higher in children who spent the shortest period in orphanages (Marvin & Britner, 1999). The percentage of children with attachment disorganisation was striking, and these children showed little evidence of recovery over time.

The second mechanism that has been proposed to explain continuity of early attachment organisation focuses on relationship representations, or internal working models. Fonagy and Target (2003) hypothesise that attachment security is related to the development of inhibitory processes that regulate dominant, but immature responses, and that once this ability is established, the individual has a lifelong advantage. According to this model, positive relational expectancies of care and intimacy are encoded as cognitive affective structures that continue to affect perception, cognition and motivation through the lifetime of the individual (Bretherton & Munholland, 1999). As Fonagy points out (Fonagy et al., 2002), Dodge et al's (1984) conclusions with regard to the importance of attributional biases are consistent with this view.

There is some evidence (Cassidy, Scolton, Kirch, & Parke, 1996) that attachment experiences have an impact on neural organisation, and it has been argued that it is this continuity that is observed. This is in line with Hofer's (1995) conclusion that what is important in attachment is not so much the immediate protective value of being close to the mother, but rather the opportunity for the development of internal regulatory structures and the modulation of affect and behaviour into a stable response system. There is evidence from animal studies that there are permanent changes in stress mechanisms following adverse attachment experiences (Plotsky & Meaney, 1993), and there is also evidence that stress produced a range of changes in neurobiological systems and structures such as the hippocampus (Bremner & Vermetten, 2001; Sapolsky, 1990). In humans, disturbances in reactivity of the hypothalamic-pituitary-adrenal axis have been shown to be associated with disorganised attachment (Nachmias, Gunnar,



Mangelsdorf, Parritz, & Buss, 1996; Spangler & Grossmann, 1993) and childhood trauma (Brenner, Randall, Vermetten, & Staib, 1997). There is also evidence that the hippocampus is vulnerable to stress (Bremner et al., 1995); it appears to be shrunken in victims of repeated childhood abuse and in war veterans suffering from post-traumatic stress disorder (LeDoux, 1996).

### ***Link between Parental and Infant Attachment: The Transmission Gap***

One of the most striking findings of attachment research has been that of the high correspondence between the attachment styles of parents and their infants. Across different studies, parental AAI classifications based on coherence, cohesiveness and plausibility of discourse correspond with infant attachment behaviour in 65-85% of cases (van IJzendoorn, 1995). Reviews of research in this area also show conclusively that parental attachment classification, when compared with intellectual ability, socio-economic factors and personality, remains the strongest predictor of infant attachment style (Sagi et al., 1994; van IJzendoorn, 1992, 1995).

Even more striking have been results from four pre-birth studies which found that maternal attachment status during pregnancy predicted infant attachment, as assessed using the Strange Situation (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Hesse, 1999; Radojevic, 1994; Ward & Carlson, 1995). This suggests that the style of parental interactions with their offspring is determined by parental characteristics which are present before the birth of the baby, and that it is not simply a reaction to particular characteristics of the infant such as temperament.

This intergenerational concordance in attachment styles has intrigued both epidemiologists (Frommer & O'Shea, 1973; Rutter & Madge, 1976; Rutter, Quinton, & Liddle, 1983) and psycho-analysts (Emde, 1988a, 1988b; Fraiberg, Adelson, & Shapiro, 1975); nonetheless, researchers have been unable to account for a substantial portion of the variance in infant attachment behaviour that is associated with adult attachment representations. This is what van IJzendoorn (1995) refers to as "the transmission gap".

Both Fonagy and Slade (Fonagy et al., 2002; Slade, Belsky, Aber, & Phelps, 1999) have proposed that the transmission gap may be explained by the link between a mother's ability to represent and think coherently about her past relationships and her ability to form a clear and accurate representation of her infant and his needs, wishes and desires. This ability of the mother to mentalise and think accurately about the infant's internal states is considered to be the most important factor in the development of secure attachment. Slade's findings indicate that mothers who are assessed as secure according

to the AAI were able to represent their relationship with their toddler in a more coherent way, and their responses also reflected greater pleasure and joy in this relationship. Slade's research suggests that the mother's clarity of representation of the child may be what mediates between the AAI classification and the mother's observed behaviour or sensitivity.

Fonagy and Target's (2003) thesis is that the key to generational transmission is the capacity of the caregiver to think of the infant as an intentional being and to adopt what they refer to as the "intentional stance" towards the pre-intentional infant. The proclivity of the caregiver to attribute feelings, thoughts and desires to the infant is seen as the key mediator of attachment and as the factor that also accounts for the classical observations concerning caregiver sensitivity (Fonagy, M. Steele, H. Steele, Moran, & et al., 1991). This ability is also seen as intimately related to the caregiver's capacity to reflect on her own and her parents' mental states in the context of the AAI, what these researchers refer to as "reflective functioning". Ratings of parental reflective functioning have been found to predict infant attachment security (Fonagy, H. Steele, & M. Steele, 1991) and are seen as closely linked to their intentional stance towards the infant and their capacity to foster the child's self-development and attachment security.

### ***Empirical Evidence of Links between Attachment and Theory of Mind***

The results of recent studies provide further specific empirical support for the hypothesis that there is a link between attachment and cognitive abilities. Attachment style in relation to mothers has been found to be a concurrent predictor of children's metacognitive abilities as manifested by memory, comprehension, and communication (Moss, Parent & Gosselin, 1995; Moss, Talagala & Kirisci, 1997). There is also longitudinal evidence from two studies supporting the hypothesis that there is a link between the attachment security and theory of mind. Fonagy, Redfern and Charman (1997), in a prospective study of the relationship between attachment security (vis-à-vis the mother at 12 months and the father at 18 months) and later theory of mind abilities, found that 82% of those classified earlier as secure in relation to mother passed a belief-desire reasoning task at age 5½, as compared with 54% of those classified as insecure in relation to mother. A similar picture was observed for attachment security vis-à-vis fathers, with 77% of those who were securely attached passing the false-belief task, compared with 50% of insecurely attached children. Security of attachment was also related to passing a second order false-belief task, with 36% of children who were secure vis-à-vis both parents passing, compared with 9% of children who were insecure vis-à-vis

both parents. These findings have been partially replicated in a small longitudinal study (Meins, Fernyhough, Russel, & Clark-Carter, 1998); 83% of children who were securely attached at 12 months passed a false-belief task at age 4, compared with 33% of insecurely attached children.

### ***Attachment, Theory of Mind, Emotional Understanding: Overlapping Constructs***

Two explanations for the relationship between attachment and theory of mind have been proposed (Fonagy et al., 2002), assuming that the relationship is non-trivial and not due to an unknown third factor, such as temperament.

The first explanation centers on the continuity and impact of the maternal factors considered mutative. Child attachment security can be regarded as an indicator of the quality of the maternal abilities that facilitate the development of psychological understanding. The same parental factors thought to facilitate child attachment security are argued to be associated with factors such as parental elaboration of emotional narratives in interactions with their children, known to facilitate the development of cognitive-emotional capacities (Harris, 2000). In this explanatory model, the caregiver's contribution to later development of psychological understanding is emphasised, especially the coaching and narratives that they provide. This model has been explicitly adopted by social-functionalists such as Dunn (1993), based on her research into the development of social and affective understanding.

Fonagy et al., (2002) have proposed another model that emphasises the importance of both parent and child at different developmental periods. The parental ability to both represent the mental world of the infant and relate to the infant as having intentions is seen as playing a crucial role in the early psychic organisation of the child, and as thus as being central to the establishment of the foundations of affect regulation, namely affect recognition and intentionality. This is seen as the bedrock on which theory of mind competence in the child is built. This will have an influence on the child's ability to engage in and benefit from other activities, such as play and interaction with parents, siblings, peers and others. To summarise, parental factors, which facilitate attachment security, are thus seen as very important in infancy, but subsequently, child characteristics, related to security of attachment, are seen to have a more significant impact. Attachment organisation is seen as reflecting the presence of mental structures, and is associated with certain attentional and emotional processes (as discussed earlier). This helps children to benefit from other social processes which are known to be related to the development of theory of mind. In Fonagy and Target's model, attachment security

functions as a type of catalyst that helps children engage in and benefit from social processes that contribute to the development of mentalisation. This early organisation is thought to have a significant impact on the child's propensity to engage in subsequent behaviours, such as pretend play, known to facilitate the development of mentalising abilities. It is also thought to have a significant impact on children's ability to benefit from subsequent opportunities for learning the rules, via reasons and nuances of affective life and relationships via parental talk about emotions and interactions with siblings and peers. Fonagy et al. (2002) have proposed a mediational model that includes the identification of particular predictors of theory of mind, and they offer evidence that the prediction is enhanced by secure attachment. Three possible mediators that correlate with theory of mind performance will be considered, namely, pretend play, parental talk about emotions, and peer group interactions. The research findings related to attachment security, theory of mind and each of these three possible mediators will be considered in turn.

### ***Pretend Play***

With regard to pretend play, Dunn's (1988) findings that children who engage more often in more pretend play show superior theory of mind performance have been discussed earlier. There is also evidence from longitudinal studies that securely attached infants show more engagement in fantasy play during the pre-school years than avoidant children (Carlsson & Sroufe, 1995; Main et al., 1985). Securely attached infants have been shown to engage more frequently in solo pretence, as well as more sophisticated pretence, during the pre-school period (Belsky, Garduque, & Hrncir, 1984; Bretherton et al., 1979; Matas, Arend, & Sroufe, 1978). The facilitating role of play in cognitive-emotional development is well recognised. Winnicott (1971) described play as providing a potential or transitional space in which the child comes to appreciate the distinction between subjective and objective reality. Play has been considered as providing a zone of proximal development for the child (Vygotsky, 1967; van Geert, 1999), and Lillard (1993) suggests that symbolic play may be a zone of proximal development for the skills required in understanding others. Astington (1994) has speculated that pretend play shared with peers and parents provides a learning situation for children. The fact that the adult or older participants share the pretend representations of reality provides a type of mental scaffolding that helps children learn about mental states. However, the hypothesis that shared pretend play, rather than solo play, is more important for theory of mind development has yet to be empirically verified. Fonagy et al. (2002) have speculated that securely attached children more readily enter more readily into shared pretend and are

more likely to benefit from the scaffolding that supports theory of mind development. There is evidence that children who were securely attached as infants were more able to incorporate suggestions from an experimenter into their play at 31 months of age (Meins et al., 1998). Similarly, maternal involvement was found to stimulate the play of securely attached children (Slade, 1987), but not that of insecurely attached children.

### ***Parents' Explanations of Emotions***

Parental talk about the feelings and mental states behind people's actions is also known to be a predictor of children's theory of mind precocity (Brown, Donelan-McCall, & Dunn, 1996; Dunn & Brown, 1993). There is also evidence that children of mothers who spontaneously provided mental state explanations for emotions when interacting with their 3½-year-olds performed better on emotional understanding tasks fifteen months later (Denham, Renwick-DeBardi et al., 1994). In turn, early attachment classification has been shown to predict the discourse patterns of mothers and their 6-year-olds, with secure dyads being more fluent and addressing a wider range of topics (Carlsson & Sroufe, 1995). This would at first glance seem to support the hypothesis that mothers who are able to facilitate attachment security are also more likely to engage in emotional and mental state explanations. While accepting this hypothesis, Fonagy and Target (2003) also suggest that children who are securely attached facilitate, and are more responsive to, parental communication regarding emotions, and are also more open to learning and benefiting from these interactions. Evidence that secure children find it easier to deal with emotional issues in an open and free way (Bretherton, 1990; Cassidy, 1988), can be interpreted as providing support for this hypothesis.

### ***Peer-Group Interactions***

The third potential mediator is that of peer-group interactions. Evidence of the link between sibling interactions and theory of mind performance (Jenkins & Astington, 1996; Perner et al., 1994; Ruffman, Perner, Naito, Parkin, & Clements, 1998) was reviewed earlier in the theory of mind section. There is also evidence that the use of mental state terms with siblings and friends is a better predictor of false-belief performance than mother-child conversations (Brown et al., 1996). There is also an independent body of evidence showing a link between attachment in infancy and social competence, popularity and empathy (Elicker et al., 1992; Lieberman, 1977; Pancake, 1985; Park & Waters, 1989; Sroufe, 1983).

While there is evidence that pretence, spontaneous parent-child mental state talks, and peer relationships are all related to both attachment and theory of mind, Dunn (1996) has drawn attention to the surprising lack of correlations across contexts. This finding

has led Dunn to conclude that the differences in mentalisation are related more to the interaction of specific dyads, rather than to the inherent capacities of the child. It would seem as likely that the variance introduced by different relationships makes it difficult to measure contributions specific to the child. On the other hand, Fonagy et al. (2002) have speculated that the lack of correlations across contexts indicate that there are a number of independent pathways linking attachment and socio-emotional competence.

### **Reflective Functioning**

In the early nineties, Peter Fonagy and Mary Target, in collaboration with their colleagues George Moran, Miriam Steele, Howard Steele, Anna Higgitt, Gyorgy Gergely, Efrain Bleiberg and Elliot Jurist, introduced a new model for understanding and studying the psychological processes underlying mentalisation, which they referred to as “reflective functioning”. They contended that reflective functioning is a key determinant of self-organisation, affect regulation and the quality of interpersonal relating (Fonagy & Target, 2003). The term “reflective cognition” is also used by Kuhn (1992) to refer to the reflective aspects of metacognition, that is, an individual’s reflective awareness of the cognitive processes they are experiencing. This awareness is regarded by Kuhn as being an important aspect of the development of mentalisation.

Fonagy and Target (2003) have proposed a model of mentalisation, or reflective functioning, that defines its normal and abnormal development, its links to affect regulation and self-regulation, as well as its potential role in psychotherapeutic treatment. They theorise that affect regulation, the capacity to modulate emotional states is closely related to mentalisation. This in turn is seen as playing a fundamental role in the development of a sense of self and agency. In this model, affect regulation is a prelude to mentalisation. However, once mentalisation occurs, the nature of affect regulation is transformed; it not only allows adjustment of affect states, but more fundamentally, it is also used to regulate the self” (p. 271). This idea of “mentalised affectivity” (Fonagy et al., 2002) applies not just to affect regulation; it also denotes the ability to discover the meanings of one’s own feelings.

Fonagy and colleagues’ findings in the London Parent-Child Project indicated that: 1) the attachment security of each parent during pregnancy independently predicted the child’s attachment security (Fonagy et al., 1992), and that; 2) the parent’s ability to understand their attachment experience in mental state terms was a better predictor of the child’s attachment security than was the parent’s attachment security (Fonagy, H. Steele, Moran et al., 1991). These findings drew further attention to the important role of

parental mentalisation abilities in child development, leading Fonagy and Target to investigate the role of reflective functioning further. The model draws on Main's (1991) work on 1) the coherence of narratives as indicative of the quality of affective and relational representational and memory structures, and 2) meta-cognition and meta-cognitive monitoring as indicative of the capacity of the speaker to consider their impact on the listener. Fonagy et al. (1998) suggest that "the Reflective-Functioning scale can be conceived as providing operationalised definitions of individual difference in adult's metacognitive capacities" (p. 6). In the London Parent-Child project, reflective functioning was found to be closely associated with performance on the coherence scale of the Adult Attachment Rating and Classification system (Main & Goldwyn, 1991). Rather than taking the categorical approach to attachment used by Mary Main, Fonagy et al. propose a dimensional approach to measuring reflective functioning. The link to attachment is also reflected in the fact that both the child and adult reflective functioning coding manuals were initially designed for use with both the Adult Attachment Interview and Child Attachment Interview.

The reflective functioning model of mentalisation also has roots in the psychoanalytic tradition. Fonagy and Target (2003) argue that the notion of an intersubjectively acquired implicit awareness of mental states has always been at the core of many psychoanalytic formulations of development. They point to links with ideas about mentalisation proposed by a number of early psychoanalysts, including Freud's (1911) original concept of "bindung" or "linking". It is possible to see similarities in the way that reflective function is conceptualised and Klein's description of the depressive position and reflective functioning as entailing an awareness of the hurt and suffering of the other, as well as an awareness of one's own role in the process (Klein, 1945/1975). There are also similarities between the way that Fonagy and Target think about the development of reflective functioning and Bion's emphasis on the importance of the mother-child relationship for the development of symbolic capacities (Bion, 1962). He proposed that the mother's ability to respond to an infant experiencing intolerable affect, in a way that shows recognition altered through mentalisation, is crucial in containing the infant and in modulating his affective experience. He describes this process as the transformation of internal states, or "beta-elements", via "alpha-function" into tolerable thinkable experiences. Fonagy and Target's ideas regarding the role of the mother's psychological understanding of the infant in the development of the true self are similar to those introduced by Winnicott (1960). He drew attention to the importance of the child being perceived in the mind of another as both feeling and thinking; this is critical in the

development of the core psychological structure and a viable sense of self. In addition, Fonagy and Target's emphasis on the importance of mentalisation for a sense of self-coherence resonates with the notions of mentalisation put forward by French psychoanalysts such as Marty (1968) protective buffer against progressive disorganisation, and thus ensuring permanence and stability.

### *The Concept of Reflective Functioning*

Using terminology from theory of mind discussed in the previous chapter, Fonagy and Target (2003) describe reflective functioning as the developmental acquisition that permits children to respond to their own conception of others' beliefs, feelings, attitudes, desires, hopes, knowledge, imagination, pretence, deceit, intentions, plans, etc. They argue that reflective functioning underlies children's mind reading capacities and that it helps children to give meaning to people's behaviour make it predictable. Fonagy and Target (2003) theorise that children's reflective functioning is linked to their interpersonal abilities, and that it helps them to consider multiple possibilities which are organised based on prior experience and to activate the responses most suited to particular interpersonal transactions. They see this ability to explore the meanings of others actions as crucially linked to the child's ability to label and give meaning to his own experience. They speculate that this ability makes a critical contribution to affect regulation, impulse control, self-monitoring and the experience of self-agency.

In contrast to theory of mind which largely neglects the question of self-understanding, reflective functioning is considered as involving both self-reflective and interpersonal components. These provide the individual with a well-developed ability to distinguish inner from outer reality, pretend from "real" modes of functioning, as well as intrapersonal mental and emotional processes from interpersonal communications. In essence, Fonagy and Target (2003) consider reflective functioning to be the mental function that organises the experience of one's own and others' behaviour in terms of mental state constructs. In addition, reflective functioning is also thought to involve knowledge of the common scripts of causal relationships between situations, emotions, beliefs and behaviours, knowledge of the transactional relationships between beliefs and emotions, and knowledge of the feelings and beliefs characteristic of particular developmental phases or relationships. Furthermore, the individual's orientation, or attitude, towards intentionality, referred to as the "intentional stance", to use Dennett's term (1987), is identified as important for appreciating intentional behaviour in the self and for creating the continuity of self experience, the latter being the underpinnings of a



coherent self structure.

Fonagy and Target (2003) emphasise that reflective functioning should not be confused with introspection. Introspection is seen as involving a metaphorical stepping back from the heat of a situation in order to undertake a conscious cognitive analysis of the situation in a state of relative emotional calm. Reflective functioning, on the other hand, is seen as an automatic procedure invoked when attempting to make sense of emotional reactions and interpersonal situations as they happen in real life, in the heat of the moment. It is considered an “over-learned” skill, and for this reason may be systematically misleading in a way that makes it more difficult to detect and correct than would be the case in making mistakes in conscious attributions. Similarly, reflective functioning lends shape and coherence to self-organisation, which is largely outside awareness.

In contrast with the notion that theory of mind is acquired during the fourth year of life (Baron-Cohen, 1993; Morton & U. Frith, 1995), Fonagy and Target (2003) contend that reflective functioning is a developmental “achievement” which is never fully acquired or even maintained across situations. At the individual level, reflective functioning does not necessarily generalise across situations and can vary considerably depending on whether it involves the self, others or attachment relationships and on the intensity and complexity of the emotions involved. Individuals have also been observed to differ widely in their ability to account for their own or others’ actions in terms of beliefs, desires and plans. Bolton and Hill (1996) and Cassam (1994), among others, regard this high level cognitive ability as an important determinant of individual differences in self-organisation, given that it is intimately involved with many defining features of selfhood, such as self consciousness, autonomy, freedom and responsibility.

### *Importance of Reflective Functioning*

With regard to sense of self and intentionality, Fonagy and Target (2003) see reflective functioning and mentalised affectivity, in particular, as determining the experiential understanding of one’s feelings, which is seen as going well beyond intellectual understanding. Psychopathology is thus thought to result from distortions in mental representations relating to certain emotions and also, more seriously, from an inhibition or lack of development of certain mentalising processes. In Fonagy and Target’s (2003) words “We can misunderstand what we feel, thinking that we feel one thing while truly feeling something else. More seriously, we can deprive ourselves of the entire experiential world of emotional richness. For example, the inability to imagine

psychological or psychosocial causation may be the result of the pervasive inhibition and/or developmental malformation of the psychological processes that underpin these capacities" (p. 271).

Reflective functioning is also seen as central to developing deeper experiences with others and ultimately, to experiencing life as more meaningful. Fonagy and Target (2003) see the successful integration of internal and external realities as essential for endowing human actions with meaning that is emotionally alive, but manageable. A partial failure to achieve this integration is seen as underlying neurotic states. In more profound and pervasive failures of integration, reality is experienced as emotionally meaningless, other people and the self are related to as things, and the relating itself occurs at a very concrete level characteristic of severe personality disorders. In the extreme, the individual may be unable to treat themselves or others as motivated by mental states, which results in a personality organisation sometimes denoted as borderline (Fonagy, 1989; 1991; Fonagy & Higgitt, 1989).

Reflective functioning is also seen as central to meaningful interpersonal communication, in that it is linked to the ability to form a clear representation of the other's mental state. This is in keeping with the philosopher Grice's (1975) observation that for a speaker to be effective, he needs to keep in mind the point of view of the listener. These notions concerning; 1) the importance of keeping the other in mind in communicative acts, and; 2) the way narrative style reflects a speaker's abilities and stance in this regard are central to the approach used by Main and her colleagues in rating the AAI (Main & Goldwyn, 1991).

Until children are able to understand emotional reactions and appreciate that mental phenomena, unlike external reality, can be altered, they remain vulnerable to their own and others' immediate emotional reactions. Prior to the development of reflective functioning, children are more vulnerable to consider inconsistency or hostility on the part of others as indicating showing something bad about the child. In contrast, if the child is able to attribute a withdrawn, unhappy mother's apparently rejecting behaviour to her emotional state, the child is better protected from lasting injury to his view of himself. Once the child is able to evaluate and use mental representations, he can modify or separate perceptions of, for example, the maltreating parent from perceptions of the self (e.g., He was unloving but I am not unlovable). These abilities may not be important in all cases, but in the case of maltreatment or trauma they may be important to the child's psychological survival, and they may relieve the pressure to re-enact the experience in concrete ways.

### ***Reflective Parenting, Self-Development and Mentalisation***

Fonagy and Target (2003) have developed an integrated model of the early development of mentalisation in the context of the caregiver infant relationship. By linking concepts of intentionality, marked affect mirroring and representational mapping, it provides a unique account of mentalisation, self development and affect regulation. The model integrates and reformulates concepts and processes initially introduced from different perspectives, including theory of mind, psychoanalysis, developmental psychology, and attachment; it thus provides a unique reinterpretation from a cross-fertilised perspective.

The parental ability to attribute intentionality to the infant is considered to be of key importance in the development of self and agency. At the same time, the quality of parental affect mirroring is seen as laying crucial to the development of affect recognition, which in turn is seen as laying the foundation for self-understanding and affect regulation. Like a number of theory of mind researchers, Fonagy and Target (2003) adopt the view of Gergely (Gergely et al., 1995; Gergely & Watson, 1996) that by the second half of the first year the infant's perception of social contingencies is "teleological" in that they have a basic appreciation of future goals. This is evident from the fact that they expect action to be goal-directed. Fonagy and Target contend that the transition from a teleological to mentalising models depends on the quality of the parent infant interaction, and that the child develops a mentalising model in order to account for human action in terms of desires and beliefs.

#### ***Marked Affect Mirroring***

In contrast with theory of mind accounts of mentalisation as developing from maturational processes, Fonagy and Target (2003) see parent-child intersubjective processes as having a profound impact on the development of the representational processes underlying mentalisation (Fonagy & Target, 1997). The period between birth and 5 months is seen as crucial in the early development of affect regulation. They suggest that a process referred to as parental "marked affect mirroring" plays a central role in the development of the child's representation of affect. On the basis of evidence from micro-observational studies of contingency and co-ordination in early caregiver infant affective exchanges, they conclude that there is empirical support for earlier psychoanalytic notions (Bion, 1962; Jacobson, 1964; Kernberg, 1984; Kohut, 1977; Mahler, Pine, & Bergman, 1975; Winnicott, 1956) concerning the role of parental mirroring in self-organisation, containment, regulation and mentalisation. Their concept of the mirroring relationship (Fonagy & Target, 2003) is closer to the empirically based

model developed by Gergely and Watson (1996) than to the traditional concepts of mirroring introduced by psychoanalysts, although it follows this in spirit. It is in line with the contention of several infant researchers that facial and vocal mirroring of affective behaviour is a central feature of parental affect-regulative interactions occurring during the first year of life (Beebe & Lachman, 1988; Stern, 1985; Trevarthan, 1979; Tronick & Cohn, 1989).

Fonagy and Target (2003) postulate that this process of parental affect mirroring is a key mechanism and that it accounts for the links between parental reflective functioning, infant attachment and later performance regarding theory of mind abilities and emotional understanding. Their theory is influenced by evidence that in early caregiver infant interactions, exchanges of facial expression showed sensitivity to the state of the other and could be systematically altered by both parties (Beebe et al., 1997; Tronick, 1989). Their theory is also supported by research evidence that mothers are more likely to imitate their infant's categorical emotional displays than random facial movements (Malatesta et al., 1989; Izard & Malatesta, 1987), that they imitate their infant's expressions of sadness and anger (Tronick & Cohn, 1989) and that they respond with mock expressions of negative affect in response to reactions of negative affect. Fonagy and Target build on Meltzoff and Moore's (1977, 1983a, 1983b) well-known findings that infants seem to have from surprisingly early on, a natural penchant for imitating the facial expressions of adults. Both Meltzoff and Gopnik (1993) and Gergely and Watson (1996) have developed models of the development of affect recognition and understanding based on these findings. Gergely and Watson's social biofeedback theory of affect mirroring was presented in Chapter 1 and was contrasted with Meltzoff and Gopnik's imitation-based hypothesis of the attribution of mental states. Gergely and Watson hypothesize that the infant's expression and the mother's facial and vocal responses come to be linked in the baby's mind through a contingency detection mechanism identified by Watson (1972). This they suggest has two important effects. The sense that the infant gets that he controls the mirroring displays of the parent, comes to be associated with the improvement in his emotional states that he experiences after the parent's contingent reaction and this eventually gives him a sense of himself as a regulating agent. This process is central in establishing the second order representation of affect, which helps to make affects recognisable and forms the basis for affect regulation. If the parent fails to provide contingent affect mirroring, this may lead to difficulties in labelling and recognising certain internal states, which will then remain confusing, unsymbolised and hard to regulate.

Fonagy and Target (2003) theorise that in order for parental affect mirroring to serve as the basis for the development of a representational system, the mother has to differentiate her affective display from that of the infant so as to mark it as not her real feeling. If she simply mirrors the infant's state of distress, this is seen as likely to result in an escalation of distress rather than in containment. The point is that the reflection of the affect state should be neither too close nor too remote. A display which mixes both a mirroring display with an affect incompatible with the child's affect helps the child to realise that his emotion is analogous to, but not identical to reality, and such a display is more likely to soothe the child and establish a representation which limits, rather than exaggerates, the intensity of the affect.

### ***Parental Stance Towards the Infant's Intentionality***

In addition to the theory of marked affect mirroring outlined above, Fonagy and Target (2003) emphasise the importance of the intentional stance as important in the development of the sense of self and self-understanding. They consider the idea of the intentional stance, first introduced by the philosopher of mind, Dennett (1987), as capturing something essential regarding an orientation towards internal intentions and mental life within oneself and others. While theory of mind researchers have been preoccupied with the question of the earliest emergence and development of intentionality in infants, Fonagy and Target propose a new theory which sees the parent's stance towards the infant and their ability to attribute and recognise the earliest signs of intentionality as key to the development of intentionality, as well as to its transmission. They stress the critical role of importance of the parent who attributes an intentional stance to the baby from birth, and who is sensitive to the first manifestations of it. More specifically, they contend that caregivers who conceive of their infants as mentalising will see their child's behaviour as intentional and will respond as if it were an intentional communication. For example, the mother may say to the crying infant, "Do you want your nappy changed?", or "Do you want a cuddle?". Thus caregivers, who unconsciously and pervasively attribute mental states to their infants, are likely respond to them as if their behaviour were an attempt at communication. In this model, the child develops both his sense of himself as an intentional being and his perception of his own mental states and that of others inter-subjectively, through his experience of being related to as a mentalising being, not only in early mother-infant interactions, but also in later shared pretend play, conversation and peer interaction.

### ***Attachment Security and Reflective Functioning***

From a reflective functioning perspective, the caregiver's perception of the child

as an intentional being and an ability to be sensitive to the moment-to-moment changes in the child's mental states are at the heart of sensitive caregiving (Fonagy, 1997; Fonagy & Target, 2003). They are seen as having repercussions on attachment security, and once the toddler has established a particular attachment style, they are seen as having consequences for the future development of mentalisation. Fonagy and Target (2003) theorise that the secure child feels safe when it comes to exploring the mental states of others, while the avoidant child shuns and is closed to the mental states of others, and the resistant child is pre-occupied with their own state of distress and is not open to intersubjective exchanges. In children who displayed resistant or avoidant attachment styles as infants, self-organisation is maintained within a rigid framework that limits mentalisation in specific ways.

The disorganised child is seen as representing a special category; hyper-vigilant to the caregiver's intentional states he may develop a hyperactive mentalisation capacity, but sadly, this is not paralleled by the development of a robust self-organisation, as in securely attached children. It is theorised that disorganised infants are not able to achieve a basic self-organisation or sense of themselves because either: 1) the caregiver relates to them too inconsistently, possibly because of shifts in her mental states and mental representation of the infant; or 2) the mental state of the caregiver is too threatening or malevolent for the child or may be one of sadness or fear, even fear of the child. Whether the caregiver's ability to accurately perceive the child's mental states is severely compromised because of unresolved loss or trauma, or because of mental illness or malevolence, the infant does succeed in getting his own states recognised by his mother. Not only has the infant missed out on this process that facilitates self-organisation. More tragically, the focus of attention then becomes shifted away from the infant's self to reading the mother's mental states.

### ***Normal Development of Reflective Functioning during the Toddler and Pre-School Years***

In their two Playing with Reality papers, Fonagy and Target (Fonagy & Target, 1996; Target & Fonagy, 1996) hypothesised that normal development of reflective functioning and psychic reality in the period between 2 and 5 years of age involves a transition from a dual mode (involving either a "psychic equivalence" mode or a "pretend" mode) to mentalisation. This model of psychic development builds on the findings of developmentalists and theory of mind researchers as reviewed earlier in Chapter 1, and uses developmental evidence to support a contemporary interpretation of Freud's concepts regarding psychic reality. Fonagy and Target (Fonagy & Target, 1996;

Target & Fonagy, 1996) contend that very young children function predominantly in what they describe as a “psychic equivalence” mode, in which ideas are not seen as representations, but as exact replicas of the world, and thus necessarily true. They theorise that the young child experiences internal psychological states as reality, and does not recognise mental phenomena as involving beliefs, thoughts, feelings and desires about things. That young children may act as if there really is a monster under the bed can be regarded as an example of this inability to use the protection offered by the cognitive perception that imagination and reality do not correspond. Further evidence in support of this theory is the finding that young children tend to be realists and thus fit their beliefs to external reality and appearances, an orientation which promotes learning and adaptation in normal circumstances (Gopnik & Astington, 1988; Perner, Leekam, & Wimmer, 1987). This dependency on external reality or appearances has been illustrated in a number of studies, which show that when 3-year-olds are given a sponge painted to look like a rock, they will maintain that it is a rock, even after they have felt it and realised that it was a sponge (J. H. Flavell, E. R. Flavell, & Green, 1983). Fonagy and Target have argued that this lack of boundaries between internal and external experience, whereby internal reality can spill over and affect external reality, and similarly whereby external reality can impose on internal reality, leaves the child vulnerable, as he has no mental mechanisms to gain mastery over the impact of external reality.

Fonagy and Target (1996) contend that a second mode, the “pretend mode”, emerges when the child plays or pretends. In this mode, ideas are thought to be representational, but unconnected to reality. Fonagy and Target attribute a central role to play in the development of mentalisation, citing the theoretical and empirical work reviewed earlier on the transformative qualities of play and mental scaffolding provided by play partners. The very nature of play and pretend is seen as helping to free the child from the grip of external reality and as creating the context in which the child can discover the representational nature of mental states. They theorise that in play, the child has a unique opportunity to “think about thoughts as thoughts, because these are clearly and deliberately stripped of their connection to the real world of people and even things” (p. 220).

Fonagy and Target (Fonagy & Target, 1996; Target & Fonagy, 1996) emphasise that their view of the development of mentalisation is not simply maturational. The involvement of the caregiver and, to some extent that of older siblings, are seen as crucial in helping the child to integrate what they refer to as a “non-mentalising reality orientated mode” and a “mentalising non-reality-connected mode”. They theorise that when older

siblings or caregivers participate in the child's pretend play, this provides the child with the opportunity to see his fantasy or idea represented in the mind of another. When the child sees the parent or playmate adopt a playful "as if" stance in response to the child's intentional state, and when he sees his thoughts and experiences represented outside of himself, as conceived by another he has the opportunity to discover that thoughts and experiences are not "for real". This type of participation by a parent or a playmate is considered by Fonagy and Target to be crucial in the process through which the child discovers the symbolic nature of thought. They argue that through the repeated experience of having his thoughts and fantasies reflected in a recognisable and accepting way, the child begins to be able to maintain a mentalising stance himself, having discovered through using his parent's mind, so to speak, to "play with reality". Through this process, the child develops a reflective mode of functioning in which mental states can be experienced as representations.

In Fonagy and Target's model (1996), the "psychic equivalence" and "pretend modes" become increasingly integrated, and what they designate as a reflective, or mentalising, mode of psychic reality is established between the ages of 4 to 5 years. This is considered a major step in the development of children's mentalisation abilities. Fonagy and Target thus see the advantage of acquiring a theory of mind or learning about pretend, primarily in terms of self-regulation abilities which it confers. Discovering the nature of mental states enables children to master their inner reality. This is in contrast with the theory of mind and social functionalist positions (see, for example, Dunn, 1993) in which theory of mind abilities and the ability to understand the intentions of others are seen as providing a competitive advantage in the pursuit of goals in the social world.

### ***Reflective Functioning: Developmental Model of Psychopathology***

Fonagy and Target (2003) regard failures in parental affect mirroring as a causal factor in psychopathology and in disturbances in self development, affect regulation and mentalisation. They delineate different types of pathological affect mirroring that are thought to have differing negative consequences for the development of the experience of self and the capacity to appreciate psychic reality; associated with different types of psychopathology.

One type of pathological affect mirroring is said to occur when the infant's affect triggers painful feelings or fear in the parent, who then becomes overwhelmed by their own distress. In this situation, the infant is then confronted with display of the parent's real anxiety, fear or anger, rather than with the containing type of marked affect



mirroring. This triggers fear and results in an escalation of the infant's distress. This is seen as an impediment to the development of a secondary representation and to the development of a sense of the boundary between the self and the other; the infant is left with the perception that his internal experience has become external. This type of pathological mirroring is seen as leading to borderline personality organisation, described in the psychiatric nomenclature as a personality disorder characterised by an inability to tolerate and regulate emotions and by a lack of personal identity and integration.

A second type of deviant mirroring is thought to underlie the development of narcissistic personality disorders, rather than borderline states. In this case, the problem arises from the fact that the infant's emotion is consistently misunderstood by the parent, i.e., although she responds with marked affect mirroring, it is not in tune with that of the infant's emotion. This results in secondary representations that misrepresent the primary emotional state, thus providing no basis for a representation of self. Fonagy and Target (2003) also mention another group involving dismissing mothers who avoid recognising the infant's affect and who fail altogether with regard to mirroring, although they do not elaborate on whether the developmental consequences are similar to or different from those described in the development of narcissistic pathologies.

Fonagy and Target (2003) have used the concept of the alien self to describe an essential aspect of the impact of the deviant parental affect mirroring. They contend that when parental affect mirroring is highly insensitive or misrepresents the infant's affect, this results in the failure of the development of a sense of the psychological self. Instead, the infant is left with a single option, that of internalising the parent's affect and state of mind; this becomes a core part of the self, hence the notion of the alien self. Winnicott (1967), they suggest that the infant, "failing to find himself in the mother's mind, finds the mother instead" (p. 279). At the same time, the alien self is thought to remain unconnected with the structures of the constitutional self and is dealt with through externalisation and projection, which provides temporary relief in that the infant experiences the alien self as being inside someone else. This process is seen as being driven by the need to get rid of the alien self in order to experience the self as coherent.

Fonagy and Target (2003) also suggest that experiencing the alien self is more or less a part of growing up, in that transient neglect is part of ordinary caregiving. In the course of the normal development of mentalising, these gaps and inconsistencies are smoothed out by self-narratives that are well within the capabilities of reasonably functioning mentalising minds. Fonagy and Target theorise that it is in the context of later experiences of trauma in the family or within the peer group that there is a risk that the

child may, in order to avoid pain, use this alien self to identify with the aggressor. In these cases, the child may come to experience himself as destructive and even monstrous. In summary, what is suggested is that early failings in parenting creates vulnerabilities; these may either be destructive for the development of the self and mentalising or may be used for defensive purposes. The continued defensive use of the alien part of the self is seen as deeply pathogenic and as connected to a future repudiation of mentalisation, to a disruption of the psychological self (as a result of the development of the torturing other within the self), and to a constant need for the presence of another onto whom the alien part can be projected. These characteristics are considered common to borderline disorder.

### ***Reflective Functioning in the Context of Abuse***

In situations of abuse, the mentalising capacity of the child and his ability to interpret the perpetrator's behaviour as reflecting something about the perpetrator, rather than about him, are theorised by Fonagy and Target (2003) as being vital to psychological survival. At the same time, the intense shame that is frequently elicited in attachment relationships, and when coupled with impairments in mentalisation, is seen as a likely trigger for violent acts against the self and others. It is also argued that where an individual or child is unable to conceive of the mental states that might explain the actions of the abuser, or when threatens the attachment relationship this contributes to a defensive and voluntary sacrifice of thinking about mental states on the part of the child. This abandonment of mentalisation leaves him functioning predominantly at a psychic equivalence mode at the level of internal reality; feelings and thoughts are perceived as real. At the same time, the child does not have the mental resources that could have helped him to fill in the gaps in self-structure through mentalisation.

### ***Empirical Evidence for the Reflective Functioning Model***

The findings of the London Parent-Child project were presented and discussed in detail earlier in this chapter. The results of studies from a number of other researchers provide support for the conclusion that maternal reflective functioning makes an important contribution to children's emotional development and symbolic abilities. The findings of Slade et al. 1999 showed a strong association between the reflective functioning of parents concerning their toddlers and their reflective functioning about their own attachment relationships with their parents (Slade et al., 1999). Maternal reflective functioning was also found to be inversely related to negative, coercive and aggressive interactions with their toddlers. The findings reported by Meins et al. (1997)

also showed that maternal mind-mindedness, as revealed in the descriptions of their toddlers, was linked to infant attachment security. In addition, Meins (1998) reported that mothers of the secure group attributed meaning to the early utterances of their children.

With regard to the link between reflective functioning and psychopathology, there is research evidence that patients with diagnoses of Borderline Personality Disorder and Eating Disorders, have significantly lower reflective functioning than patients with other diagnoses (Fonagy et al., 1998). Further analysis revealed a more complicated picture and showed that patients with a history of abuse were more likely to present with Borderline Personality Disorder when they also had low reflective functioning, while in the group without histories of trauma there was no relationship between reflective functioning and borderline disorder. Results from a small exploratory study comparing prisoners on remand with an inpatient psychiatric group with Borderline Personality Disorder and a control group matched for diagnosis, socio-economic status, age and IQ, also showed that the prisoners had significantly lower reflective functioning than the inpatient group (Fonagy et al., 1998). Within the prison group there was also a significant difference in reflective functioning between the reflective functioning of prisoners who had committed violent crimes, and other prisoners.

These findings suggest that reflective functioning, or rather, the lack thereof, may be an important risk factor for the development of borderline psychopathology when associated with other risk factors and trauma, and that many individuals who transgress the social codes protecting person and property, frequently have severe inhibitions of reflective functioning. These provocative findings, call for further research to clarify the associations and mechanisms involved and to explore whether and how reflective functioning can be a target for intervention.

### ***Critical Consideration of Reflective Functioning***

At this stage there is developmental data showing links between maternal reflective functioning, or mind-mindedness, and children's attachment security, as well as between attachment security and the emergence of symbolic abilities, theory of mind and understanding of mixed emotion in children. While the latter abilities can be interpreted as evidence of children's reflective functioning, direct evidence is lacking. To date, there are no measures available for assessing children's reflective functioning. It has yet to be determined whether or not these capacities can be measured with sufficient reliability and validity, and whether or not they can be shown to be distinct from children's intellectual abilities or related to other developmental processes and psychopathology. At both a

conceptual and methodological level, the question also arises as to whether or not reflective functioning, as operationalised for the purposes of measurement in the reflective functioning scale, focuses on an ability that is both too specific and too intellectual. It may be that reflective functioning is specifically involved in some of the memory systems, like autobiographical memory, but it may be well be a less important aspect of procedural knowledge, given that additional processes are thought by others to be involved in classifying and making sense of social interactions (Anderson, 1976; Cantor & Kihlstrom, 1987; Winograd, 1975; Tulving, 1983). It is possible that reflective functioning is more like one aspect of personality, rather than directly underlying the quality of interpersonal and intrapersonal appraisal and emotional experience per se. Thus reflective functioning may constitute several pieces of the social intelligence puzzle, but other social emotional abilities, such as temperament and empathy, may be equally important and may make an independent contribution to the quality of interpersonal and intrapersonal experience.

### **Conclusion**

The above reviews presented three different, although related, views of the development of children's mentalisation capacities. In the first paradigm, that of affective understanding, children learn to mentalise in their interactions with their parents, older adults and siblings. The emphasis is on coaching and on learning through narratives that adults provide regarding affects. In addition, pretend play, especially role-play, is considered as providing important opportunities to develop the capacity to imagine what others are feeling. In the second paradigm, that of attachment, attachment style predicts children's mentalisation capacities. It is argued that this is because secure children will seek out, engage with, and benefit more from those processes identified as important in the development of affective understanding, and theory of mind. In addition, securely attached children are more likely, at each subsequent developmental stage to continue to reap the benefits of being with parents who are orientated towards the mental aspects of relationships and experience. Parents who have the qualities that foster attachment security can also be expected to engage in emotion rich discussions and narratives when interacting with their children. In the third paradigm, that of reflective functioning, both this orientation of the parent towards intentionality, and their capacity to consider thoughts, feelings and desires of others in relationships, are central to the development of mentalisation abilities in children. This comes about through an interaction with attachment, as well as the other processes identified above.

### **CHAPTER 3**

#### **ASSESSING THE MENTALISATION ABILITIES OF PRIMARY SCHOOL-AGE CHILDREN: METHODOLOGICAL ISSUES AND THE ANNA FREUD CENTRE STUDY**

There are major gaps in our understanding of whether and how children's theory of mind and emotional understanding are linked to adaptive functioning and to psychopathology. At the same time, there is sufficient evidence to postulate, based on the preceding review of theoretical developments and empirical research, that children's ability to use mental states to think about their relationships is linked to social adaptation, and also to behaviour difficulties and disturbances of affect. The lack of reliable age appropriate measures of mentalising abilities in primary school-aged children remains one of the principal problems besetting researchers wanting to address these questions. In part, this problem is related to the challenges involved in developing reliable and valid assessments of complex mentalisation. The phenomena of interest can be defined as the mental ability to take into account affects and internal states within oneself and others, and as the ability to have a sense of the context and intentions that might give rise to these reactions, especially in interpersonal processes. This mental ability is used in everyday life, to make sense of our own reactions and those of others; thus it is especially used in interpersonal contexts. But the question remains: can it be operationalised and studied in a reliable and valid way? The challenge is to conceive of and develop appropriate and reliable methods for assessing this ability, or more likely, abilities, as different abilities are hypothesised to be involved in understanding self and others. In terms of assessing mentalisation in primary school-aged children, theory of mind, affective understanding, and reflective functioning present promising approaches. The rationale is as follows: the identification of a method in which the ability of interest is elicited and its full range tested, combined with an objective, manualised method for assessing and coding the child's performance can be expected to produce the most reliable estimate of children's mentalisation abilities.

The goal of this thesis is to identify and develop measures of mentalisation that are appropriate for use with primary school-aged children and that can be used to obtain an

objective, valid and reliable assessment of mentalisation. In this chapter, three candidate measures will be introduced. The focus will be on key measurement issues and on the methodological approach that will be used to examine the reliability and validity of these measures.

## **Candidate Measures of Children's Mentalisation Abilities**

### ***Theory of Mind***

The Happé's Strange Stories (HSS: Happé, 1994) measure was selected because it goes beyond other theory of mind measures and assesses the ability to consider the intentions of the speaker when interpreting everyday expressions that involve figures of speech not literally true. This procedure was developed by Happé within the theory of mind tradition and uses short stories to recount everyday situations involving communicative interactions between two people involving joking, sarcasm, figures of speech and lying, amongst others. The measure is pitched at an 8-year-old level, although the HSS has never, in fact, been used with this age group. It is one of the only theory of mind tests designed for children older than 6 years of age and was chosen in part for this reason.

The coding system allows the rater to obtain an objective assessment of the child's ability to consider the intentions of others in everyday speech in which what is said is not literally true. The construct measured by the HSS can be described as children's theory of mind abilities, and more specifically, their ability to consider the intentions of the speaker in understanding everyday speech in which what is said is not literally true. The HSS will be presented and described in detail in Chapter 4.

### ***Reflective Functioning***

A child version of the Reflective Functioning Scale (CRFS: Target et al., 2001) has recently been adapted from the Adult Reflective Functioning Scale (ARFS: Fonagy et al., 1998), and was designed for use with the Child Attachment Interview (CAI: Target et al., 2000). Further development of the CRFS coding system and manual was undertaken as part of the work for this thesis. The CRFS coding system is designed so that raters can make an objective assessment of children's ability to provide mentalising accounts of themselves, their key attachment relationships and their context. The raters assess descriptions children provide of specific memories or events to illustrate key qualities of themselves and their relationships.

The construct that is measured has been defined as children's reflective

functioning, and more specifically, as children's propensity to give accounts of themselves and their close relationships in mental state terms. The CRFS will be presented and described in detail in Chapter 6.

### *Affective Understanding*

The Affect Task (AT: Fonagy et al., 2000) was designed to obtain an objective measure of children's affective understanding, as assessed in the context of a semi-structured interview. The test explores various dimensions of children's affective understanding from a reflective functioning perspective. It builds on empirical work on the development of affective and social understanding, and it integrates this work with a reflective functioning approach. The AT uses simple pictures depicting common situations in which there is a protagonist, victim and observers in order to evaluate: 1) the accuracy of children's emotional attribution; 2) children's understanding of the links between the affects evoked and the interpersonal events; 3) their understanding of emotional dissemblance; 4) their understanding of how affects change over time; as well as 5) their ability to be reflexive when challenged to consider why someone else may have a quite different emotional reaction.

The AT has similarities to the Kusche Affective Interview (Kusche, Greenberg, Beilke; 1988) in terms of the domains that are assessed. The procedure used in the Kusche Affective Interview was not considered an optimal measure for the assessment of children's mentalisation abilities, as it uses a self-report format and appears to principally assess social knowledge involving social rules and etiquette. The Affect Task, when used with the coding manual, makes possible an objective assessment of children's emotional understanding based on the way they respond in the interview. The ability assessed by the AT can be defined as children's affective understanding vis-à-vis five different areas: the affects evoked in social contexts, the interpersonal causes of these affects, the phenomenon and reasons for emotional dissemblance, how feelings change, and affective reflexivity. The AT will be presented in more detail in Chapter 5.

## **Model and Conceptual Issues: Relationship between Mentalisation, Intelligence, Psychopathology and Attachment**

### *Are Socio-Cognitive Abilities Different from Intelligence?*

All three models of children's mentalisation abilities presented thus far are based on the implicit assumption that these abilities are distinct from general intelligence. Baron-Cohen (1995) has claimed that the core deficit in autism is one of social

intelligence and this is regulated by a distinct, biologically based theory of mind module. Fonagy et al. (2002) see reflective functioning as being associated with an interpersonal interpretative mechanism developed in the context of early parent-infant interactions. At the same time, reflective functioning is differentiated from the constitutional characteristics and intelligence of the child. Similarly, in the developmental models of emotional understanding, it is parent-child processes, rather than constitutional factors such as intelligence, that are seen as determining children's affective understanding. The question is whether or not this assumption of the relative independence of children's socio-cognitive abilities and intelligence is well founded and, assuming that these are distinct abilities, whether or not valid assessment methods can be devised that do not simply assess social knowledge or intelligence.

Reviews of studies of social intelligence indicate that there are still major questions about: 1) whether or not sociocognitive abilities involve a faculty distinct from non-social cognition and 2) whether or not social intelligence is more than just general intelligence applied to the social domain (Kihlstrom & Cantor, 2000). It has proved remarkably hard to develop self-report measures that can produce results indicating that social intelligence is a capacity that can be distinguished from general intelligence. Ford and Tisak (1983) produced promising results using a multi-trait, multi-method study. Using reports obtained from multiple informants, they found that a composite of social competence and performance on Hogan's (1969) scale of empathy was a better predictor of interview-based expert evaluations of social competence than were academic measures. This would suggest that when verbal self-report measures of social intelligence are used, correlations with IQ are very likely, but this is not the case when using performance based assessments of social intelligence. Even more promising was that the interview-based evaluations, especially when done by experts, seemed to provide a valid assessment of social abilities and empathy. A number of other investigators (Brown & Anthony, 1990; Marlowe, 1986) reported similar findings, although there is concern that different methods used to assess general intelligence and social intelligence might account for the apparent differences (Kihlstrom & Cantor, 2000). An additional important contribution comes from a factor analytic study conducted by Wong, Day, Maxwell, and Meara (1995) showing that social perception (accuracy in decoding verbal and nonverbal behaviour) and social insight (accuracy in interpreting social behaviour) were closely related and were distinct from social knowledge (awareness of the rules of etiquette). All three of these abilities were distinct from traditional academic ability. The findings from subsequent factor analytic studies testing various models of the relationship



between social and academic intelligence suggest that crystallised social intelligence or knowledge was not discriminable from academic intelligence, but that fluid social intelligence is discriminable from both (Jones & Day; 1997). Similar findings were obtained in a recent sophisticated factor analytic study conducted by Lee, Wong, Day, Maxwell and Thorpe (2000), leading one to the conclusion that social and academic intelligence are distinct domains and that crystallised and fluid abilities can be identified in each domain.

Lee et al. (2000) have drawn attention to the important implications of the choice of assessment methods and to the fact that when abilities are assessed using self-reports and other-reports, method based variance exceeded the variance shared between objective assessments of the same abilities and either self-report or other-report assessments. This was true for the assessment of abilities in both the academic and social domains. In the light of these findings, it can be concluded that objective assessments of socio-cognitive and academic abilities are more likely to produce valid results. This added to the impetus for identifying and developing objective methods for assessing children's socio-cognitive abilities; these methods will be presented in this study. In terms of the choice of assessment methods, the present study relies on objective assessment methods and is thus well suited to assessing the relationship between children's socio-cognitive and academic intelligence.

### ***Empirical Evidence of the Link between Attachment and Mentalisation Abilities***

Based on the evidence presented in Chapter 2 that children's theory of mind and mixed emotional understanding are predicted by their attachment security, the association between attachment and mentalisation abilities appears robust. The development of child measures of reflective functioning now makes it possible to investigate empirically whether or not this association between attachment security and children's mentalisation abilities can be demonstrated to be present across three different assessment methods.

### ***Model of Mentalisation and Psychopathology***

Given the previous findings that Fonagy et al. (1998) reported from studies with adult psychiatric patients, it is unlikely that there are direct links between children's mentalisation abilities, and their reports of feelings of depression and unhappiness, and behavioural difficulties. Negative life events and difficult family circumstances are known to play a central role in children's depression and unhappiness (Wing, Mann, Leff & Nixon; 1978). Unless these can be taken into consideration, it might not be possible to

conclude whether children's mentalisation abilities make a contribution to finding adaptive solutions in the face of overwhelming odds. Ideally longitudinal studies are needed to determine whether children's mentalisation abilities do indeed contribute to resilience and recovery in the contexts associated with increased risk of adult psychopathology such as of childhood trauma, neglect and deprivation (Cicchetti & Rogosch, 1999). The observation of Rutter et al. (1970), in the context of the Isle of Wight study, that many apparently normal children reported depressed feelings or looked depressed, leads to the further question of whether or not children's mentalisation abilities can help them maintain their adaptive functioning in spite of a depressed mood and depressive disorder. The additional question arises as to whether or not theory of mind, or reflective functioning, can increase children's awareness of how unsatisfactory their circumstances are and contribute to the development of the type of distortions in attributions that depressed children have been observed to make.

Finally, given the possibility that conduct disordered children have a theory of bad minds, it is worth investigating whether or not children develop a theory of disturbed minds when disturbed parent-child emotion-focused discussions is the norm. Dodge (1991) has concluded that children, who grow up in contexts where aggression is valorised or who have aggressive role models, are more likely to use pro-active aggression in their relationships with others. In addition, Dodge, Pettit and Bates (1997) have found that children, who have been exposed to political or family violence and trauma, are more likely to react to aggression with fear and counter aggression. There is also evidence suggesting that in certain cultural contexts there may be more deviant pathways to peer popularity (Richters & Cicchetti, 1993). Luthar and McMahon's (1996) findings suggest that in certain crime and violence-laden disenfranchised communities, aggressive behaviour that is regarded as anti-social from a mainstream perspective, results in peer popularity.

From a conceptual point of view, there is a more fundamental problem that may reduce the chances of finding links between child factors such as children's mentalisation abilities, and child psychopathology, i.e., there are still many serious concerns regarding the definition of the latter construct (Achenbach, 1992). As Achenbach (1992) and Cicchetti & Rogosch (1999) point out, child psychopathology has been defined partly through clinical observation and experience, and partly through factor analytic studies, and work is just beginning on the integration of a developmental approach.

## Measurement Issues

### *Research with Children*

A number of factors are known to influence the reliability of assessments of the abilities of young children. Children are known to present particular problems regarding rapport and motivation; they may have difficulty understanding the task maintaining attention and coping with distraction and fatigue (Messick, 1983). At age 6, children are just beginning to acquire the ability to realise when they do not understand a question and to communicate that fact, and may thus be more likely to not respond or to say that they do not know the answer in response to a question.

It is also considered inevitable that test-retest reliability will be lower when the same measure and test-retest interval used with older children is used with younger children (Hartmann, 1992). There are also concerns as to whether or not children prior to age 8 can be reliable informants, Shaffer (1985) has suggested that children may not understand questions about symptomatology; thus, interpretation of these responses can be difficult. At the same time, children are considered to be more reliable informants than their parents when it comes to internalising problems (Edelbrock, Costello, Dulcan, Conover, & Kalas, 1986). For these reasons, objective assessments of children's abilities or difficulties, based on interview data, are considered to provide the most reliable results.

Hartmann (1992) also points out that because of developmental changes, scores on a particular measure may be a valid indicator of ability at a given age, but may primarily reflect motivation at another age. This is particularly relevant when using tests that are too easy, and there are some questions regarding whether this will be the case for the HSS. Newly emerging abilities are known to be difficult to catch, as they are emerging, and to have transient performance levels. This is known to lead to lower reliability when newly emerging abilities are assessed (Hofstaetter, 1954), and may be a factor when assessing reflective function in very young children.

### *Reliability and Validity in the Context of Assessing Mentalisation Abilities*

The procedure for assessing reliability, including interrater reliability, internal consistency and test-retest reliability is relatively standard, regardless of the type of construct, and there is general agreement regarding the criteria that determine whether or not interrater reliability and internal consistency is good. There is, however, a question regarding test-retest reliability criteria, and for a number of reasons. Kline (2000) has commented that respondent factors, such as respondents having mental health problems

can be expected to lower test-retest reliability of otherwise reliable instruments.

In addition, complex rating systems that rely on the skills of the interpreter are also likely to lower reliability. As Western, Feit and Zittel (1999) point out, when interrater reliability is a factor in the test-retest scores, test-retest reliability is bound to be lower. Lower test-retest scores are also inevitable when using projective tests, story completion tasks and narrative methods that inevitably introduce variance. Western et al. (1999) have concluded that it is not realistic to expect these measures to have the same test-retest reliability as, for example, intelligence tests, and that what is important is that these tests measure certain abilities more reliably than self-report methods. Generally, reliability estimates of lower than .60 are considered unacceptably low (Murphy & Davidshofer, 2001). The same criteria was used in a review of the reliability of self-esteem measures by Bosson, Swann and Pennebaker (2000). At the same time, reliability of projective tests are generally in the .5 to .65 range (Murphy & Davidshofer, 2001). Kline (2000), who generally contends that anything less than .8 suggests that a test is not reliable, comments in a discussion of projective tests that a test-retest correlation of .5 for a projective test over a 10 months was "quite high", suggesting that the test may be useful. This raises questions as to how far the reliability "envelope" can be stretched. As Kline points out, however valid the justifications may be for why a particular test of construct shows lower stability, this does not change the fact that reliability coefficients below .5 could reflect chance. For the purposes of this study, test-retest correlations of .6 and above will be considered as moderate, and correlations of .5 and above will be considered as low.

There is also the issue of how to interpret the magnitude of the correlation between the test and the criterion. Based partly on the results of a review of a number of studies on personnel selection with a *N* of over 140 000 (Schmidt, Hunter, & Pearlman, 1981) Murphy and Davidshofer (2001) have pointed out that correlations higher than .3 are not very common. Even a good, carefully chosen test is unlikely to show a correlation with a criterion of higher than .5. In addition to method variance, informant variance is also a factor that has to be considered. In the context of child psychopathology, meta-analyses have reflected correlations of .6 between informants who have similar roles in relation to the child (e.g. mother versus father), .28 between informants playing different roles (parents versus teachers), and .22 between children and parents or mental health workers (Achenbach, McConaughy, & Howell, 1987).

The impact of method variance is becoming increasingly recognised. A review of research by Buckley, Cote and Comstock (1990) on measures of personality showed that

in addition to measurement error, approximately 22% of score variance can be attributed to measurement method, leaving only 42% of the variance attributable to the traits the scale was designed to measure. This calls into question the desirability of the multi-method studies that were highly touted not too long ago. In this respect, the design of the present study may not be optimal, in that because of limitations in resources, self and parent-reports were used to obtain information regarding children's symptoms of anxiety, depression and behavioural difficulties.

Finally, there is the question of the particular methods that have been chosen to assess mentalisation abilities. The method for assessing theory of mind is predominantly performance based. The coding system is relatively straightforward and can be expected to be applied reliably by psychology undergraduates after a brief training period. The method used to assess affective understanding and reflective functioning is comparatively more complex, and it requires more ability and skill at the level of interpretation. Here, as is true for the AAI, the CAI, projective tests and story completion methods, test validity reflects not just the test, but also the interpretation and coding of the test data (Karon, 1991). It would seem that in the history of cognitive assessment, the tide turned against interview based methods after Vernon and Parry (1949) showed that interviews, except when conducted by individuals with exceptional abilities, made selection worse, rather than better. At the same time, the success of attachment research in which interviews are rated by highly trained expert raters using a carefully elaborated coding system attests to the usefulness of these complex rating methods in obtaining objective and reliable assessments of personal attributes that are otherwise difficult to measure. In this context, there is a growing recognition that objective expert assessments of interviews or performance data is likely to be the most reliable method in the assessment of socio cognitive abilities (Kihlstrom & Cantor, 1999).

### **Aims and Objectives**

The aims of this study are to present the HSS, AT and CRFS and to examine their psychometric properties, including reliability and validity.

In order to establish the reliability of the three measures, the objectives are: 1) to present the adapted coding system and evaluate the interrater reliability results obtained using the coding systems; 2) to evaluate the internal consistency reliability of each scale, after investigating the dimensionality and factor structure of the scales; and 3) to establish whether the HSS, AT and CRFS have adequate stability over a 3-month test-retest period, as well as after 1 year. Following the guidelines of Endicott and Spitzer (1978) for

interpreting ICCs, values above .75 will be considered as indicative of good reliability; between .50 and .75 as fair; and values below .50 as reflecting poor reliability<sup>1</sup>. To establish the stability of the HSS over time, Pearson product-moment correlations ( $r$ ) between time 1 and time 2 scores over a 3-month test-retest interval, as well as after a 1-year period, are calculated. Following Murphy and Davidshofer (2001), moderate test-retest correlations of .6 and above will be considered as acceptable, test-retest correlations of .5 and above will be regarded as low, and below .5 as poor.

The validity of the HSS, AT and CRFS will be evaluated in the context of the relationships and associations between performance on the measures and key demographic variables, IQ and expressive language abilities, psychopathology, social adaptation and attachment. These relationships and associations will be examined with the following objective in mind: 1) to investigate the performance of the scales with regard to gender and family composition; 2) to evaluate the construct validity of HSS, AT and CRFS in the context of their relationships with age, IQ, expressive language abilities, psychopathology and social-adaptation; 3) to evaluate the predictive validity of the HSS, AT and CRFS in relation to psychopathology, by examining whether or not factors other than age and intelligence enhance the prediction of children's socio-cognitive abilities as measured on the HSS, AT and CRFS; 4) to evaluate whether or not there are differences in socio-cognitive abilities of children as measured by the HSS, AT and CRFS as a function of attachment security and clinical psychopathology while adjusting for factors such as age and IQ; 5) to examine the convergent validity of the assessments of children's mentalisation abilities by comparing the correlations between children's performance on the HSS, AT and CRFS.

### *Hypotheses*

The hypotheses corresponding to all the objectives will be outlined below.

#### *Gender and Family Composition*

No gender effects are expected, given the divergent findings with regard to gender and socio-cognitive abilities, and also considering that the measures do not assess abilities in which females have been shown to have advantages, such as interpreting mental states via the eyes and facial expressions (Baron-Cohen & Hammer, 1997).

In the light of previous findings that only children showed delays in theory of

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<sup>1</sup> Jones, Reid and Patterson (1973) suggested .70 agreement as an acceptable level when complex coding schemes are used, while Gelfand and Hartmann (1975) recommend .60.

mind abilities compared with children with siblings (Perner et al., 1994; Jenkins & Astington, 1996), family composition is expected to have a small impact on the mentalisation abilities of only children when compared to that of children with siblings.

### ***Mentalisation and Age, IQ, Expressive Language, Psychopathology and Social-Adaptation***

A positive correlation between age and children's mentalisation abilities is expected and will be regarded as providing confirmation that the measure is sensitive to the effects of age on the development of children's theory of mind. Given previous findings regarding the relationship between theory of mind and language abilities (Astington & Jenkins, 1995; J. G. De Villiers and P. A. De Villiers; Happé, 1995; Tager-Flusberg, 1996), positive relationships of weak to moderate strength between mentalisation abilities, expressive language abilities and verbal IQ, are expected. The relationship is expected to be weaker than during the pre-school years when language abilities are more closely associated with fluid intelligence than with crystallised intelligence. Theory of mind abilities, as measured on the HSS, and affective understanding, as measured on the AT, are expected to show comparatively stronger correlations with intelligence than with reflective functioning, as the HSS and the AT could be argued to measure abilities which involve intelligence, whereas the CRFS is expected to be more closely linked to attachment and expressive language abilities. The CRFS is expected to show a moderate correlation with reflective functioning if narrative accounts, such as that of Harris (2000) are accepted: he contends that the development of both abilities are rooted in interpersonal narrative construction processes.

From a theoretical perspective, mentalisation abilities, as measured by the HSS, AT and CRFS, are expected to be associated with better social functioning, and to be inversely related to behavioural difficulties. Weak inverse relationships are expected between performance on the HSS and behaviour problems as measured on the CBCL Externalising Scale, as well as between the HSS and social adaptation, measured on the CAFAS (here higher scores reflect increased adaptive difficulties). In addition, mentalisation abilities are expected to be inversely related to depression, as measured on the CDI, and anxiety as measured on the STAIC, although the theoretical and empirical evidence suggest that the relationship may be indirect.

### ***Predictors of Children's Mentalisation Abilities***

It is expected that taking into account social adaptation and psychopathology will contribute to the prediction of children's mentalisation abilities for the reasons outlined previously.

### ***Differences in Mentalisation as a Function of Attachment and Psychopathology***

Differences in the mentalising abilities of secure and insecure children (as measured on the CAI) are expected to remain significant after adjustment for other contributors. This hypothesis is based on the findings that attachment predicts theory of mind performance and affective understanding (Fonagy, Redfern et al., 1997), and on the argument that from a theoretical perspective, they can be seen as overlapping constructs (Fonagy, 1997). The mentalisation abilities of children with behaviour problems in the clinical range of the CBCL are expected to be significantly lower than those of the non-clinical group, after adjustment for other contributors. Similar differences are expected with regard to depression, with children who report symptoms of depression in the clinical range on the CDI expected to have lower intentional understanding on the HSS.

### ***Convergent Validity***

Children's mentalisation abilities as measured on the HSS, AT and CRFS are expected to converge, and their performance on the different measures is expected to show moderate correlations.

## **Method**

### ***Participants and Recruitment***

The samples that will be used to investigate the psychometric properties of the HSS, AT and CRFS are sub samples of a larger sample of children recruited for a project of child measure development conducted at the Anna Freud Centre under the direction of Peter Fonagy and Mary Target from University College London. The aim of the Anna Freud Centre study was to identify, develop and standardise measures of the mentalisation abilities of primary school-aged children that could then be used to measure the impact and outcome of child psychotherapeutic treatment.

Ethical approval for the Anna Freud Centre study was obtained from the Ethics Committees of University College London and the Camden and Islington Health Authority (see Appendixes A1, A2, A3 and A4). A sample of 200 children aged 5-11 were recruited; 100 were referred by schools and 100 by Child Mental Health Clinics in the greater London area. To recruit the school sample, head-teachers of 20 schools in the greater London area, as well as a school in Reading, were contacted via letter. This letter introduced the aims and procedures of the project and requested study participation. The Reading school was recruited specifically with the objective of increasing the range of social backgrounds of the children in the sample. Three schools in London, as well as the school in Reading, agreed to participate. The head-teachers from the participating



schools distributed a package containing study information sheets and consent forms (parallel versions for children and parents) to all potential participants and their parents/caregivers.

The clinic sample was recruited from two National Health Service Child and Family Consultation Services (Hornsey Rise Child and Family Unit and Canonbury Child and Family Unit), as well as from charitably funded child-psychotherapy clinic, the Anna Freud Centre (which also served as the home base for this research project). All three clinics were situated in the North-London area. The recruitment procedure firstly involved the identification of all referrals within the relevant age range. The following exclusion criteria were then applied: 1) family not fluent in English; 2) diagnosed or suspected pervasive developmental delays or psychotic disorder; 3) serious medical or neurological condition; 4) child without guardian, or very recently placed with foster family; and 5) acute family stress or other circumstances which makes study participation inappropriate (e.g., family in shelter or referral under court order). Study information sheets describing the aims of the study, as well as an outline of what study participation would involve, were mailed to all families who met the criteria for study participation. Families were then contacted by telephone or by letter to confirm their willingness to participate in the study, and to arrange meetings for the study interviews. In total, approximately 25% of families who initially met the inclusion criteria agreed to participate in the study.

Thirty children agreed to participate in the test-retest study and repeated the HSS, AT and CRFS after 3 months. In addition, approximately 50% of families who participated at time 1 agreed to return for interviews after 1 year.

The descriptive statistics of the samples used in the three studies to investigate the psychometric properties of the HSS, AT and CRFS, will be presented separately in the chapters focusing on each measure. The sample sizes with valid data for the HSS, AT and CRFS differ because: 1) some of the measures, such as the HSS, were introduced later in the Standardisation Study; and 2) the format for interviews such as the AT, as well as the child attachment interview which is coded with the CRFS, was being developed in the initial stages of the Standardisation Study and changed substantially, such that only data collected using the final form of the interviews is valid.

### *Measures*

Thirteen parent-report and child-report measures were selected to assess IQ and expressive language abilities, child psychopathology, child adaptation, self-esteem, attachment and mentalisation abilities. All the measures used in this study are summarised in Table 3.

**Table 3**

*Child and Parent-Report Measures Used in the Study*

Dimension	Assessment Type	Measure
Intelligence	Test	Wechsler Intelligence Scale for Children
Expressive Language	Test	Clinical Evaluation of Language Fundamentals – Revised
Child Psychopathology	Child-report	Child Depression Inventory
	Child-report	State and Trait Anxiety Inventory
	Parent-report	Child Behaviour Checklist
Child Adaptation	Parent-report	Child Adaptation and Functioning Scale
Self-Esteem	Child-report	Harter's Self Perception Profile
Attachment	Interview & Classification System	Child Attachment Interview
Mentalisation	Interview &	Happé's Strange Stories
	Rating Scale	Affect Task
		Child Reflective Functioning Scale

### ***Measures of IQ and Expressive Language Abilities***

***Wechsler Intelligence Scale for Children - Third UK edition.*** (WISC-III<sup>UK</sup>: Wechsler, 1991). This is the UK edition of the most widely used intelligence scale for children aged 6-16, and its psychometric properties are well established. The WISC consists of 13 sub-tests measuring different aspects of intelligence that are used to calculate Verbal and Performance subscale scores, as well as a Full-scale IQ score. In the present study, a shortened form of the WISC-III was used. Two sub-tests were used to estimate verbal subscale scores: 1) similarities, which requires the child to identify how two words are alike; and 2) vocabulary, which requires the child to explain the meaning of words presented. To estimate Performance subscale scores, the following two sub-tests were used: 1) picture arrangement, which requires the child to order a series of picture cards so that they tell a story and 2) block design, which requires the child to arrange blocks to replicate two-dimensional designs. These subtests were chosen because they have been shown to correlate well with the subscale scores and are considered to provide good estimates of verbal and performance abilities. The short form takes approximately 30 minutes to administer. Verbal IQ, Performance IQ and Full-Scale IQ scores were subsequently pro-rated based on the four subscale scores.

In this study, the relationship between intelligence and children's mentalisation abilities will be examined in order to evaluate whether or not the latter is sufficiently distinct from intelligence such that it may be considered a separate construct.

***Clinical Evaluation of Language Fundamentals-Revised.*** The CELF-R (Semel, Wigg, & Secord, 1987) is a widely used standardised language measure designed to assess receptive and expressive language skills in children aged 5-16. In the current study, the following three expressive language sub-tests of the CELF-R (UK version) were used: 1) formulated sentences, which assesses the ability to form simple, compound and complex sentences and 2) recalling sentences, which assesses recall and reproduction of surface structure as a function of syntactic complexity, and 3) sentence assembly which assesses the ability to assemble syntactic structures into grammatically acceptable and semantically meaningful sentences. Raw scores derived from each of the CELF-R sub-tests were converted into norm-referenced standard scores.

In this study, CELF-R standard scores will be used as an indicator of children's expressive language abilities, and the relationship between these abilities and children's mentalisation abilities will be examined.

### ***Measures of Child Psychopathology***

***Children's Depression Inventory.*** The CDI was developed by Kovacs and Beck (1977) and is a widely used and well-researched measure of depression in children (Kovacs, 1992). It is designed for use with children aged 6-17 and consists of 27 items assessing cognitive, affective and behavioural aspects of depression. It is presented as a self-report scale and takes approximately 15 minutes to complete, with the option of reading the items to the child or having the child read them by himself. For each item, the child is asked to select one of three descriptors that best describes them during the past two weeks. On the underlying 3-point Likert scale, 0 indicates an absence of the depressive symptom and 2 indicates the clear presence of the symptom. Item scores are summed and this raw score converted to standardised T-scores. Interpreting the T-score, the following categories are used: 1) 45-55 (average); 2) 56-60 (slightly above average); 2) 61-65 (above average); 3) 66-70 (much above average); and 4) above 70 (very much above average). Normative data is available to compare the level of dysfunction of children with that of peers of the same sex. The CDI has also been used with a fairly large normal sample in the UK (Charman, 1994).

Kovacs (1992) reports test-retest reliability data from a number of studies for the CDI. Moderate test-retest correlations have been reported over a 2-week period, with the majority of correlations falling between .62 and .87, but performance is less stable over longer periods. The internal consistency of the measure has been demonstrated to be good.

In this study, CDI total scores will be used to investigate the relationship between child-reports of depressive symptoms and child mentalisation abilities as assessed by the three measures under investigation in this study.

***State-Trait Anxiety Inventory for Children.*** The STAIC is an empirically derived standardised research tool developed by Spielberger, Gorsuch and Lushene (1970). The inventory is designed for self-completion, either individually or in group settings, by children aged 9-12, but it can also be used with younger children of at least average reading ability. It consists of two scales, the state and trait scales, each containing 20 items, and takes approximately 20 minutes to complete. The state scale is designed to measure fluctuations in subjectively perceived levels of anxiety over time. For each item, children are asked to choose one of three responses that best indicates how they feel at a particular moment in time. The trait scale is designed to measure the inter-individual differences in anxiety proneness that are relatively stable over time, and children have to

chose the response that best reflects how they feel in general.

STAIC items are rated on a 3-point Likert scale, and possible total scale scores range from a minimum of 20 to a maximum of 60. Total scores can be converted and presented as T scores, with a mean of 50 and a standard deviation of 1. Normative data based on a total of 737 children attending schools in Florida, U.S., is available. The test-retest reliability of the trait scale of the STAIC has been reported to be in the moderate range, with  $r = .65$  for boys and  $r = .71$  for girls (Spielberger, 1973). Given that variability in state anxiety was expected, test-retest reliability for state anxiety was much lower,  $r = .31$  for boys and  $r = .47$  for girls. Spielberger has demonstrated that both scales have good internal consistency.

In this study STAIC trait and state scores will be used to investigate the relationship between child-reports of anxiety symptoms and child mentalisation abilities as assessed by the three measures under investigation in this study.

***Child Behaviour Checklist.*** The CBCL is a widely used and well-standardised parent-report measure of the behavioural problems and social competencies of children aged 4-18. It was developed by Achenbach and Edelbrock, (1983), and subsequently revised by Achenbach (1991). The checklist consists of 113 behaviour descriptions that are rated on a 3-point scale (not at all, sometimes, or very often). It takes approximately 10 minutes to complete and can either be self-administered, as in this study, or administered as part of an interview. A computer-based program is used to score the CBCL and generates a Total Problem score, as well as subscale scores for Internalising problems (e.g., social withdrawal, somatic complaints, depression) and Externalising problems (e.g., aggression, inattentiveness, delinquency). The scores are reported as standardised scores, with a mean of 50 and a standard deviation of 1. Total scores of above 70 are considered to be in the clinical range (Achenbach, 1991). Achenbach (1978) reported 8-day test-retest correlations averaging  $r = .89$  across subscales.

In this study, the CBCL total scores, as well as subscale scores of internalisation and externalisation, will be used to investigate the relationship between parent-reports of child emotional and behavioural difficulties and performance on each of the three measures of mentalisation that are presented in this study.

***Child and Adolescent Functioning Scale.*** The CAFAS was developed by Hodges (1995) to assess the degree of impairment in child and adolescent functioning, with the last 3 months as the period of reference. It is designed for use with children aged 5-17. The CAFAS consists of eight scales covering role performance at school, work, home or community; appropriateness of behaviour towards others/self; regulation of

moods/emotions; self-harm; inability to think rationally; and substance use. A score for each scale as well as a total score is generated. The rater considers the child's lowest level of functioning (rather than optimal functioning) to determine the severity level which applies and assigns scores as follows: 30 for severe disruption or incapacitation, 20 for moderate disruption (persistent or major occasional disruption of functioning) 10 for mild disruption (significant problems or distress) and 0 for minimal disruption or no impairment. A detailed scoring manual with explicit behavioural anchors is available, and there is a training manual that includes rated vignettes. Fair to good interrater reliability has been demonstrated, with ICCs  $> .8$  for the total scores, even when using lay raters. The CAFAS has previously been used to assess rehabilitation treatment effects (Quist & Matshazi, 2000), clinical outcomes in the Fort Bragg Evaluation Project and service utilisation and costs (Hodges, Wong, & Latessa, 1998). These studies have demonstrated that the scale is sensitive enough to detect changes resulting from clinical interventions.

In the present study, the CAFAS was coded by two raters with post-graduate training in psychology and experience in working with children in clinical settings; they were thus familiar with evaluating child emotional and behavioural functioning. The vignettes provided by Hodges (1995) were used for training. Good interrater reliability was established, based on ratings of 30 cases (ICC's  $> .9$  for the total scores). The CAFAS Manual is designed so that it can be used to rate data obtained from clinical or semi-structured interviews and case records. In this study, audiotaped semi-structured interviews with parents and caretakers regarding their children were transcribed and coded to obtain CAFAS scores.

In this study the CAFAS total score will be used to investigate the relationship between child adaptation and functioning based on parent-reports, and performance on the three measures of child mentalisation that are focused on in this study.

### ***Measure of Self-Esteem***

***Harter's Self-Perception Profile.*** Harter developed the Self-Perception Profile in order to assess children's domain-specific perceptions about their cognitive, social and athletic competence, their physical appearance and behavioural conduct. Global self-worth is assessed separately. There are six questions corresponding to each domain as well as to global self-worth, and means are derived for each. It is possible to use the global score alone for statistical analysis. The scale uses a structured alternative format which is designed to mitigate against the problem of social desirability, and The child first chooses which of two descriptions best describes them, and then decides whether the

description bears a close (very true) or not so close (sort of true) resemblance to them. In effect, each item is rated on a scale of 1 - 4.

Psychometric properties of the Self-Perception Profile have been investigated in two large UK samples of non-referred older children and adolescents (aged 8 and older) (Granleese & Joseph, 1994; Hoare, Elton, Greer, & Kerley, 1993). The results indicate that global self-worth showed moderate stability ( $r = .61$ ) over a 3-year period for children aged 8-11 (Granleese & Joseph, 1994). Hoare et al. (1993) adapted the language of the questionnaire for use with a Scottish population, making minor changes to the wording and replacing Americanisms with expression clearly understood in most UK contexts. This adaptation was used in the present study. The results of the UK studies replicated the factor structure found in US samples, but the norms were slightly lower in the UK sample. The items are scored on a 4-point scale and a mean score is calculated for each subscale. Based on the findings in the Scottish study, children are categorised as falling outside the normal range when they have scores of one or below on the scales.

In this study, Global self-worth scores, as measured by the Harter Self-Perception Profile, will be used to investigate the relationship between self-esteem and child mentalisation.

### *Measures of Attachment*

***Child Attachment Interview.*** The CAI, Version III (Target et al., 2000), is a 15 question semi structured interview adapted from the Adult Attachment Interview (Main & Goldwyn, 1991); it is designed to access children's mental representations of themselves, their attachment figures and relationship episodes. It has been demonstrated to be appropriate for use with primary school-aged children aged 8-12, but Shmueli-Goetz (2001) has concluded that ratings based on narrative coherence are not be reliable when used with younger children.

More specifically, the interview aims to access narratives of specific relationship episodes (REs) involving attachment figures, with REs constituting "a relatively discrete episode of explicit narration about relationships with others or with the self" (Luborsky & Crits-Christoph, 1990). Following the AAI, the CAI aims to assess the child's overall current state of mind with respect to attachment, but it focuses on current experience of relationships, rather than on early experiences, as in the AAI. The interview style is less neutral than that of the AAI, and interviewers use probes when necessary to obtain full (and codable) attachment narratives and to elicit characteristics of emotional processing. The child is asked: 1) to think of three words that describe what they are like as a person, and then to describe a time or a memory that illustrates why they chose a specific

adjective; 2) to think of three words that describe their relationship with their mother or what it is like to be with her, and then again to give a description; 3) to describe a time when their mother was angry with them or when they argued; 4) to think of three adjectives for relationship with father followed by the same requests for examples; 5) to describe a time when their father was angry with them or when they argued; and 6) to describe a time when their mother and father argued. In addition, the CAI also asks the child to give accounts of times of crisis (e.g., personal injury, bullying), losses, and separations from parents. The interview generally takes 25-50 minutes to complete, and it is videotaped for coding purposes.

A detailed coding manual, the Child Attachment Interview Coding and Classification Manual, Version III, is available (Target et al., 2000) and is appended (see Appendix D1). The scoring system involves the identification and coding of REs on 10 scales. Idealisation, Dismissal and Preoccupied Anger are rated separately for each caregiver, but Emotional Openness, Balance of Positive and Negative References to attachment figures, Use of Examples, Self-Organisation, Resolution of Conflict, and Overall Coherence are rated for the narrative as a whole. The Emotional Openness scale was designed to measure the extent to which the child is able to both label emotions and provide affect-laden descriptions that reflected an understanding of the interplay between affect, mental states and behaviour. The Coherence scale assesses the child's ability to present an integrated and consistent account of his/her attachment relationship when under the pressure of trying to access memories and provide specific examples.

Attachment status with respect to both the mother and father is determined based on performance on these scales. The coding manual can be used to obtain either a two-way classification of (secure or insecure), or a three-way classification in which insecurity is classified additionally as avoidant/restricted or ambivalent/entangled. The interviews are coded directly from video, with full transcriptions of the interview. Shmueli-Goetz (2001) has reported good interrater reliability for the main classifications ( $\kappa = .80$  for mother, and  $\kappa = .79$  for father). Good internal consistency has also been demonstrated as has been satisfactory test-retest reliability over an 8 week period was shown for attachment with respect to mother ( $\kappa = .68$ ;  $p < .001$ ) and father ( $\kappa = .68$ ;  $p < .001$ ).

In the present study, the CAI was coded by two raters with post-graduate qualifications in psychology and who were trained by one of the developers of the CAI. In this study, the CAI main classifications (secure and insecure) will be used rather than the sub-classifications, given the relatively small sample with CAI data. The CAI



interview material will also be coded for reflective functioning, using the Child Reflective Functioning Scale as outlined in Chapter 6.

### ***Measures of Child Mentalisation***

In the next three chapters, the Happé's Strange Stories (HSS), the Affect Task (AT) and the Child Reflective Functioning Scale (CRFS) will be presented. Part of the work undertaken for this thesis involved the adaptation and development of their respective coding systems and manuals.

### ***Procedure***

Depending on the preference of parents or caretakers, interviews were conducted at the Anna Freud Centre, at school (in the case of the school sample) or at the family home. Families who came to the Anna Freud Centre to complete the research interviews were reimbursed for travel and parking expenses. Children and their parents completed the lengthy research battery in the course of two to three visits that each lasted 2-3 hours. Informed consent was obtained from all participants and involved explaining the study aims and procedures, as well as the rights of participants to withdraw from the study at any stage and to refuse to answer questions. The child information and consent forms were worded in such a way as to be intelligible to children aged 5-11 and were read and explained, when necessary, to them. Children and their parents completed the interviews at the same time, but with two different interviewers, when possible. For rating purposes, all the child interviews were videotaped, and parent interviews were audiotaped.

Interviewers were selected on the basis of demonstrated ability and sensitivity to work with children and parents of a wide range of backgrounds, including families with considerable psychosocial problems. All interviewers had a minimum of 3 years of undergraduate training in psychology. They received a 2-week orientation and training in the use of the battery of interviews and assessments. The training involved role-play interviews with an experienced interviewer (the author of this thesis), as well as videotaped practice interviews with children who were not study participants.

## **CHAPTER 4**

### **PSYCHOMETRIC PROPERTIES OF THE HAPPE'S STRANGE STORIES**

This chapter will focus on the psychometric properties of Happé's Strange Stories (HSS) and will examine the performance of primary school-aged children on this theory of mind measure designed to test comprehension of everyday speech in which what is said is not literally true. As such, it requires the ability to consider the intentions of the speaker in interpreting communication.

The goals of this chapter are to examine the reliability of the HSS, and to explore its validity. The contributions of age and IQ to performance on this measure will be examined, as will be the contributions of social functioning, psychopathology, attachment and self-esteem. In summary, the aim is to determine whether or not the HSS is psychometrically robust including whether or not it is sensitive to the subtle distortions in mentalisation considered to be associated with emotional, social, behavioural and attachment difficulties in a sample of primary school children aged 5-11.

#### **Introduction**

Theory of mind researchers have provided startling evidence of the precocious abilities of infants and pre-school children to relate to others as intentional beings (Baron-Cohen, 1995; Gergely et al., 1995; D. Premack & A. J. Premack, 1995; Wellman & Lagattuta, 2000) and to mentalise about their beliefs and desires. Much less is known about the development of theory of mind during the primary school years, during adolescence and adulthood. Little is also known about how the ability to interpret the intentions of others relates to affective and behavioural difficulties, and self-esteem, if at all. Conceptual and methodological problems related to the use of second order theory of mind tests with older children (Baron-Cohen, Jolliffe et al., 1997) and a general lack of age appropriate alternative assessment methods have contributed to this state of affairs. Children with a mental age of 6 generally pass second order theory of mind tests (Baron-Cohen, Jolliffe et al., 1997), and it is misleading to refer to them as tests of complex theory of mind and inappropriate to use them with older populations where they are bound to produce ceiling effects. Happé (1994) and, more recently, Baron-Cohen, Jolliffe et al. (1997) addressed this problem by developing measures of more advanced theory of

mind skills appropriate for use with older populations. The HSS task, developed by Happé (1994), was designed as a test of more advanced theory of mind and is pitched roughly at the level of 8 to 9-year-olds. Baron-Cohen's (2001) "Reading the Mind in the Eyes" task was designed to test a related ability, that of "Mindreading" or interpreting mental states as reflected in the eyes and surrounding areas. However, both authors have primarily used these tasks to investigate the nature of theory of mind deficits in young adults with autism and Asperger syndrome. There is still currently no data on how children aged 8-9 actually perform on the HSS, or with which age range it can be reliably used. Furthermore, it has not yet been demonstrated that this task may be sensitive measure of the theory of mind deficits associated with difficulties in adaptation and with behavioural problems.

The aim of the present study is to examine the psychometric properties of the HSS when used with primary school-aged children aged 5-12.

### *Theory of Mind at Age Six and Beyond*

Theory of mind research has largely focused on the abilities of pre-schoolers to understand the beliefs and desires of others, and impressive though the theory of mind abilities are given how young these children are, these abilities are only a fraction of the abilities used by adults in everyday communication, work, love, play and art. In spite of their basic theory of mind abilities to predict someone else's actions by considering what they may know, think and desire, pre-school children still frequently struggle to know what others feel and think (J. H. Flavell et al., 1995). It is only during the primary school years that children develop the more general ability to know when others are thinking and to imagine what they may be thinking. By the end of the primary school years, children display a more nuanced understanding of the behaviour and thoughts of others. They come to understand that these are individual and are based on personal characteristics which are likely to be stable over time will depend on their knowledge, experience and preferences (Wellman & Lagattuta, 2000). Nonetheless, little is known about the developmental changes that occur during the primary school years. This is surprising given that entry into school presents opportunities for increasingly complex relationships with peers and teachers which can be expected to stimulate another period of rapid theory of mind development. In addition, children's increasing cognitive skills can also be expected to contribute to significant development in their ability to explore and consider the mental states of others, as well as their own.

Indeed, it is during the primary school years that children show an increasing

ability to talk about their own thoughts (Wellman, 1990) and increasingly to think about themselves in mental state and trait terms rather than principally in terms of their physical attributes, abilities and context (Harter, 1999; Wellman, 1990). In contrast to younger children who describe themselves in absolute terms, for example, as always being nice, older children describe their characteristics as more mixed, depending on the situation (Harter, 1999). While this may help to protect them from all out negative self-evaluations, their growing critical abilities also present new challenges to their self-esteem. If Harter's model of self-esteem as involving the ability to reconcile aspirations with actual abilities or qualities, is accepted, the question arises as to whether or not this ability is, broadly speaking, associated with theory of mind. In the context of Harter's findings that global self-worth is much more inextricably linked to satisfaction with physical attractiveness rather than to satisfaction with academic and athletic abilities, the question arises as to whether or not theory of mind helps children to effect reconciliations in the areas which matter most.

### ***Theory of Mind and Language Development***

Research findings indicate that at the end of the pre-school period, language abilities make a significant contribution to theory of mind performance on false-belief tasks (Astington & Jenkins, 1995; Happé, 1995; Tager-Flusberg, 1996). Language abilities, especially complement syntax, have also been shown to predict variance in later performance on false-belief tests (J. G. De Villiers & P. A. De Villiers, 1999). As Perner (1991b) has suggested, one possible explanation for this relationship is that language based representational systems are advantageous in that they provide both a syntax which facilitates thinking about human behaviour, and symbolic representations elaborate enough to overcome experiential evidence which would otherwise be compelling. Language skills also facilitate the discussions and interactions through which children get to know more about the minds of others (Dunn, Brown, Slomkowski et al., 1991). Recent research evidence reveals an interesting picture of links between language acquisition and intentionality. There is evidence suggesting that early manifestations of awareness of others as intentional agents (Baron-Cohen, 2000), such as joint attention in 1-year-olds, predict later language acquisition (Sigman & Ruskin, 1999). Tager-Flusberg (2000) suggests that this is because early learning of words depends on the interpretation of words and communicative gestures as intentional acts.

Performance on theory of mind tests has been found to be generally correlated with verbal intelligence (Happé, 1995). Research findings have indicated that the

relationship between verbal IQ, theory of mind test performance and actual social abilities is complex, especially when psychopathology enters into the equation. Klin et al. (2000) and Tager-Flusberg (2000) suggest that language can be used as a kind of scaffolding by high functioning autistics to “hack out” solutions to theory of mind tests even though they do not have the ability to use these capacities spontaneously in the way that those who pass this test normally do. It has been argued that this accounts for the gap that has been noted between performance on theory of mind tests and real life social abilities (U. Frith et al., 1994). Indeed Klin et al. call attention to the need for a theory of mind in action, which they contend involves a series of additional skills, including the ability to react intuitively to inflections and tone of voice as well as to fast-changing emotional expressions, such as those measured by Baron-Cohen’s (2001) Reading the Mind in the Eyes test.

With regard to performance on the HSS specifically, no direct correlation with IQ and task performance has been reported when it is used with adults with autism and Asperger syndrome (Happé, 1995; Jolliffe & Baron-Cohen, 1999). The picture is likely to be different when the HSS is used with children. Given the previous findings regarding the link between verbal IQ and theory of mind performance in younger children, verbal IQ can be expected to explain a significant proportion of the HSS performance of primary school-aged children.

### ***Individual Differences in Theory of Mind:***

#### ***Attachment, Gender, Parental and Sibling Factors***

A number of factors have been identified as possible contributors to individual differences in children’s theory of mind abilities. First of all, children’s theory of mind abilities have been shown to be associated with their attachment security (Fonagy, Redfern et al., 1997; Moss et al., 1995). In addition, there is evidence from longitudinal studies that the quality of the early attachment relationship with the caregiver has a significant impact on theory of mind development, symbolic capacities and affective understanding (Meins et al., 1998; H. Steele, M. Steele & Fonagy, 1996).

There is also evidence of considerable individual differences in the rate of theory of mind development, depending on factors such as family composition and emotional climate, as well as on parenting practices and competencies with regard to talking about emotions and their causes. Parent-child discussions involving feelings and their causes have been shown to be predictive of 3 year old children’s abilities in this regard, and also of affective perspective taking in 7 year old children (Dunn, Brown, & Beardsall, 1991).

Growing up in a family in which the emotional climate is generally positive and tolerant and in which feelings are talked about, thought about, and elaborated on is generally conducive to the development of children's emotional (Denham, Renwick-DeBardi et al., 1994; Dunn & Brown, 1994). In stark contrast, the research evidence indicates that there is a significant disadvantage in terms of understanding emotions when children have histories of sexual or physical abuse (Shipman & Zeman, 1999; Shipman et al., 2000).

Children who have siblings also seem to have an advantage when it comes to acquiring theory of mind abilities and there is evidence that 3-5 year olds with siblings pass "false-belief" tasks earlier than only children of the same age (Perner et al., 1994; Ruffman et al., 1998; Jenkins & Astington, 1996). At this stage, it is not clear whether these advantages are temporary or enduring, and whether the gap closes or opens up during the primary school years. Opportunities to engage in pretend play with older siblings (Youngblade & Dunn, 1995) and interactions with older people have been identified as generally contributing to children's early understanding of beliefs and mental states (Dunn, Brown, Slomkowski et al., 1991; C. Lewis et al., 1996). Participation in role-play has also been shown to predict false-belief understanding (Astington & Jenkins, 1995), and is thought to contribute to the development of theory of mind because it provides an excellent opportunity to imagine and explore what other people might feel in different circumstances and roles.

The findings regarding gender differences are not conclusive (Dunn & Brown, 1993), although some studies show female advantages in theory of mind (Baron-Cohen, Jolliffe et al., 1997; Baron-Cohen & Hammer, 1997; Halpern, 1992). There is evidence that already by age 2, girls already talk more extensively about emotions (Dunn et al., 1987). This may be due, in part, to the fact that girls show precocious language development; thus, it is possible for parents to talk to them at an earlier age about the causes and consequences of feelings (Haden et al., 1997; Reese et al., 1993).

As this review of research studies indicates, attachment, parental factors, the presence of siblings, and gender are expected to have an impact on theory of mind performance on the HSS. The present study did not include assessments of the parental qualities that the literature has identified as being important to theory of mind development.

### ***Theory of Mind, Social Adaptive Functioning and Psychopathology***

At a theoretical level, it is reasonable to expect that affective disorders, especially behaviour disorders, will be associated with difficulties in mentalisation. However, with

the exception of studies involving schizophrenics during acute episodes, theory of mind research has failed to show a relationship between theory of mind and psychopathology when using second order theory of mind tests (Corcoran, 2000). In retrospect, it would hardly seem surprising that depressed adult patients had no difficulty with these very basic tasks; as it is unlikely that any non-psychotic adult of normal IQ would find these tasks difficult. Happé and U. Frith (1996) also did not find evidence of deficits on second order tests in conduct disordered children aged 6-12, although as they themselves observed, a more challenging theory of mind test, such as the HSS, might have been more appropriate. Happé and U. Frith concluded that children with conduct disorder may not have a theory of mind deficit, but rather a distorted theory of mind or a theory of “nasty minds”, which they develop based on their experience of growing up in environments in which negative reactions predominate. Problems with executive control, rather than with theory of mind, were also considered as an alternative explanation. Blair and colleagues (Blair, 1995; Blair et al., 1996; Blair, Jones, Clark, & Smith, 1997) also found no theory of mind deficits using the HSS with psychopaths who had committed first degree murder, leading them to the conclusion that psychopaths have deficits in empathy, rather than in theory of mind. It is difficult to see why this would not also manifest in measurable deficits in mentalisation about others, and findings by Fonagy, Target et al. (1997) suggest that this is indeed the case. Using measures of attachment and reflective functioning, this group of researchers found evidence of significant deficits in mentalisation in borderline patients (Fonagy et al., 1995), as well as in psychopathic and non-psychopathic prisoners who had committed first degree murder (Fonagy, Target, et al., 1997). These findings suggest that there are significant mentalisation deficits in certain non-autistic clinical groups with social difficulties, when compared with normal controls, but that measures are required which assess this at a level of difficulty appropriate to the age-group being studied and the degree of interpersonal disturbance.

Evidence from neuro-imaging studies point to considerable overlap in the areas involved in affective processing and theory of mind, and there appears to be a neuro-functional loop integrating these abilities in the context of social responses (Damasio, 1994; Klin et al., 2000). Seen from this perspective, a number of different scenarios could account for social and interpersonal difficulties, and it is here that research in this area is advancing rapidly. In this respect, the aims of the present study are modest; to explore whether or not performance on a theory of mind test with a strong language component is related to affective and behavioural difficulties as reported by primary school-aged children.

### **Aims and Objectives of this Study**

The aims of this study are to present the HSS and examine its psychometric properties, including reliability and validity.

In order to establish the reliability of the HSS, the objectives are: 1) to present the adapted HSS coding system, and to evaluate the interrater reliability results obtained using this coding system; 2) to evaluate the internal consistency reliability of the HSS scale, after investigating the dimensionality and factor structure of the HSS; and 3) to establish whether or not the HSS has adequate stability over a 3-month test-retest period, as well as over a 1-year period. These indexes of reliability will be evaluated to determine whether or not they meet the criteria set forth by Kline (2000) for interrater reliability and internal consistency, as well as the criteria outlined by Murphy and Davidshofer (2000) in evaluating test-retest reliability. (These criteria will be detailed in the section addressing the analyses that will be used.)

The validity of the HSS will be evaluated in the context of the relationships and associations between performance on the HSS and key demographic variables, IQ and expressive language abilities, psychopathology, social adaptation and attachment. These relationships and associations will be examined with the following objectives in mind: 1) to investigate the performance of the scale with regard to gender and family composition; 2) to evaluate the construct validity of HSS in the context of the relationships between children's intentional understanding as measured by the HSS and age, IQ, expressive language abilities, psychopathology and social-adaptation; 3) to evaluate the predictive validity of the HSS by examining whether factors other than age and intelligence contribute to the prediction of children's intentional understanding; 4) to evaluate the discriminant validity of the HSS by examining whether or not there are differences in intentional understanding as a function of attachment security and clinical psychopathology while adjusting for factors such as age and IQ.

The hypotheses corresponding to each of these objectives will be outlined below.

### ***Hypotheses***

#### ***Gender and Family Composition***

A number of hypotheses will be examined with regard to gender and family composition. No gender effects are expected, given the divergent findings with regard to gender and theory of mind, and also given the fact that considering that theory of mind, as measured by the HSS, tests the capacity to understand the intentions of others as revealed through speech, rather than through visual cues. Females have been shown to have an



advantage in interpreting mental states revealed in the eyes and facial expressions.

In the light of previous findings that only children showed delays in theory of mind abilities when compared with children with siblings (Perner et al., 1994; Jenkins & Astington, 1996), it is expected that the intentional understanding of only children will be significantly lower than that of children with siblings, when measured on the HSS. The performance of the HSS of children living in single-parent families and children living in two-parent families will also be compared. In light of previous findings that link single-parent families to adversity and risk (Luthar, 1999) the hypothesis is that living in single-parent families will have a negative impact on theory of mind performance on the HSS.

### ***Theory of Mind and Age, IQ, Expressive language, Psychopathology and Social-Adaptation***

The hypotheses relating to the construct of theory of mind as measured by the HSS will be examined next. The ability to consider the intentions of others when interpreting what someone says is expected to develop with age during the primary school years. A positive correlation is expected between age and children's performance on the HSS is expected and will be regarded as providing confirmation that the measure is sensitive to the development of children's theory of mind abilities. In the light of previous findings of relationships between theory of mind and language abilities (Astington & Jenkins, 1995; J. G. De Villiers and P. A. De Villiers; Happé, 1995; Tager-Flusberg, 1996), positive relationships of weak to moderate strength between performance on the HSS, expressive language abilities and verbal IQ, are expected. Relationships of weak or moderate strength between performance on the HSS and both intelligence and verbal expressive abilities are also expected given that the HSS tests the capacity to interpret intentionality behind speech and as such is expected to involve a cognitive linguistic component.

From a theoretical perspective, theory of mind, as reflected in the ability to understand the intentions of others, is expected to be associated with better social and psychological functioning, and to be inversely related to behavioural difficulties. The lack of evidence supporting these expectations is considered to be due in part to the use of inappropriate assessments methods that used theory of mind tasks that were too easy given the age of the children so that differences could not be detected. Weak inverse relationships are expected between performance on the HSS and behaviour problems (as measured on the CBCL Externalising Scale), social adaptation (as measured on the CAFAS; here higher scores reflect increased adaptive difficulties), depression (as measured on the CDI) and anxiety (as measured on the STAIC).

### ***Predictors of Children's Theory of Mind***

The hypothesis is that behavioural difficulties and social adaptation will add to the prediction of children's theory of mind, once the contributions of other variables such as age and intelligence have been taken into account. In addition, it is expected that psychopathology will enhance the prediction for the reasons outlined previously.

### ***Differences in Theory of Mind as a Function of Attachment and Psychopathology***

The hypothesis is that there will be significant differences in the theory of mind abilities as measured by the HSS, as a function of attachment style as measured on the CAI. This expectation is based on the findings that attachment style predicts theory of mind performance (Fonagy, Redfern et al., 1997), and on the fact that, theoretically, they can be seen as overlapping constructs (Fonagy, 1997).

In addition, the hypothesis is that children with behaviour problems in the clinical range of the CBCL are expected to have significantly lower theory of mind abilities as measured by the HSS, compared with the non-clinical group, after adjustment for other contributing factors. Similar differences are expected to be found with regard to depression, with children who report symptoms of depression in the clinical range on the CDI expected to have lower intentional understanding as measured on the HSS.

## **Method**

### ***Participants and Recruitment***

The HSS was administered to a sample of 109 children aged 5-11, recruited from referrals to Child and Adolescent Mental Health Services in London<sup>2</sup>. This study forms part of a larger project of measure development and standardisation conducted at the Anna Freud Centre, London, UK (see Chapter 3 for a detailed discussion of the recruitment procedure).

The sample comprised 68 boys (62.4%) and 41 girls (37.6%). The age difference between boys ( $M$  age = 9.87,  $SD$  = 4.18) and girls ( $M$  age = 8.82,  $SD$  = 4.61) was not significant ( $t(107) = -1.20, p = .23$  (one-tailed)).

The vast majority of the children lived with their natural mothers (95%); approximately half lived in two-parent families (51%) with both biological parents present (44%). The majority of children were Caucasian (72.5%) and for nearly all of

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<sup>2</sup> Two children were removed from the analyses because English was not their mother language and they had extremely low scores on the HSS.

them (98%) English was the language spoken at home. Many were only children (38%) or had only one sibling (37%), and those with two or more siblings (25%) were in a minority. In terms of maternal educational level, the sample was fairly equally distributed between mothers who had attended secondary school (30%), those who had attended college (32%) and those who had university qualifications (38%). Exactly half of the mothers were not employed at the time of the interview, and a significant percentage (26%) of fathers were unemployed. With regard to the nine standard employment categories used in the census, 50% of families fell into the highest sector which denotes technical, professional and managerial occupations, and 30% into the middle sector, which includes personal services, skilled trade and administrative and secretarial occupations. The remainder of the families fell into two other categories: manual workers (6%) and retired persons, homemakers and unemployed people (14%).

### *Measures*

#### *Happé's Strange Stories (HSS)*

The HSS was originally designed by Happé (1994) as a more complex test of theory of mind when compared with original false-belief tasks. It was originally used to compare the abilities of autistic children and adults with that of mentally handicapped children and adults (age 6 and older). The HSS tests the ability to understand that communication is about the expression and communication of intended, rather than literal, meaning, i.e., the ability to infer the "mind behind the speech" (Mitchell & Isaacs, 1994). In other words, it measures the ability to explain a communication in which another person says something that is not literally true; an ability which requires an understanding that communication depends on the intention of the speaker. The stories used in the HSS involve ordinary, everyday interactions between two people, but in stories one character says something which is not literally true. The HSS tests the ability to understand the intentions behind the utterance; this can be inferred from both the context leading up to the utterance, and the description of the relationship between the characters. The task has an inductive component in that the child is required to infer the general mentalising rule from the particular story in order to score at the highest level.

The full original version of the HSS test consists of 24 short vignettes accompanied by drawings clearly depicting engaging scenarios which school-aged children are likely to be familiar with. There were 12 types of stories and two vignettes per story type. In line with Happé's (1994) suggestion, only half of the original battery was used, one of each type of story. This study reports on ten stories from the original

battery, namely: Lie, White Lie, Joke, Pretend, Misunderstanding, Persuade, Appearance/Reality, Figure of Speech, Sarcasm, and Contrary Emotions. Double Bluff and Forgot stories were excluded from the analysis because of inconsistencies in the way these stories were presented and in which the questions were asked. The stories and the accompanying pictures that were used in this study are appended (see Appendix B1). The final battery contained an equal number of stories with girl characters and boy characters.

The original coding system developed by Happé (1994) distinguished between incorrect responses containing factual errors, those offering physical justifications, and those offering mentalistic justifications. Happé used a co-validation method in which all the scores were double rated by a second rater, and she reports the degree of concordance for stories as ranging from 92- 100%. Shand (1996), working under the direction of Mary Target and Peter Fonagy, adapted and elaborated this coding system with the aim of differentiating between increasing levels of response sophistication. The rating system distinguished between four levels of mentalisation, and scores were allocated as follows: a level one score was given when no reference to mentalisation was present, and in the case of physical explanations and bizarre responses; a level two score required a mental state answer even if incorrect or incomplete; a level three score required the identification of the correct general principle; and a level four score required the correct general principle, as well as a reference to the “relationship between the two minds in the story”, for example, “She is pretending and playing with her friend”.

***The Revised HSS Coding System.*** Shand’s (1996) coding system was replaced with a re-conceptualised Revised HSS Coding System. The reasons for this revision were two-fold: 1) an acceptable level of interrater reliability using Shand’s coding manual could not be reached after several trials; and 2) at a conceptual level, the raters, as well as the author, questioned the rationale of allocating higher scores to children simply because they provide a reference to the relationship between the two minds in the story. The main criticism was that these interpersonal references frequently seemed somewhat redundant and immature. It was suspected that more socially mature children may consider it inappropriate to provide information that is obvious to their conversation partner, unless explicitly asked to do so. There is also a theoretically motivated reason for not considering these explicit responses to be superior, simply because they refer to the interpersonal context. One of the Gricean maxims of conversation requires us to be informative (Grice, 1975) but to refrain from telling people what they already know. Given the way in which the HSS questions are phrased, it did not seem appropriate to consider explicit interpersonal references as evidence of a higher level of theory of mind,

and the coding system was thus adapted accordingly.

A brief summary of the revised coding system is provided below and illustrated with examples of children's responses to the story in which Emma pretends that a banana is a telephone (see Table 4). Responses were rated in terms of accuracy and according to whether explanations involved references to mental states, or focused on concrete explanations. A manual containing examples of the different levels of responses for each story was developed in order to limit the problems experienced by both Happé (1994) and Jolliffe and Baron-Cohen (1999) regarding the subjectivity of ratings. For a detailed description of the coding manual and coding sheet of the HSS, see Appendixes B2 and B3.

Table 4

*HSS: Examples of the Revised HSS Coding System*

Score	Category of Responses	Illustration
2	Correct mental response	She is pretending the banana is a telephone.
1	Correct physical response	Because the banana is shaped like a telephone.
0	Incorrect response	Because it is a banana, not a telephone.
-1	Bizarre response	The banana rang.

A small number of children provided replies that were frankly bizarre and not just incorrect because they failed to understand the story. For example, in response to a picture of a little girl pretending a banana is a telephone, a child replied "The banana rang". These responses were rated at the lowest level, -1. The next level included children who provided incorrect physical and mental responses to the justification question. Children who were unable to hazard an answer, or who insisted that they did not know the answer, were also rated at this level. Correct responses that simply stated the physical truth, rather than displaying an understanding of the mental state of the protagonist or the motivation for their action, were rated 1. The highest level included responses that explain the correct motivation and reasoning behind the behaviour. These responses were rated level 2. Even if the child failed to use the word which best described the intention behind the utterance, for example, that the little girl is pretending that the banana is a telephone, they were given credit if their answers reflected more than

a physical explanation, e.g., “Because she was playing that the banana was a telephone”.

Evidence of the sensitivity of the HSS comes mainly from research with adults suffering from autism and Asperger syndrome. Happé (1994) found that the HSS successfully discriminated amongst groups of autistic subjects who failed both first and second order tasks, those who failed only second order tasks, and those who passed both tasks. Baron-Cohen, Jolliffe et al., (1997) found a similar pattern of theory of mind deficits using a test that measures the ability to recognise mental states as expressed by the eyes and the surrounding facial area. A more recent study by Jolliffe and Baron-Cohen (1999) also showed that performance on the HSS discriminates between normal controls, autistic adults with normal IQ and adults with Asperger syndrome who passed second order tasks. In the current study, the sensitivity and discriminant capacity of the HSS when used with primary school-aged children will be tested in relation to emotional and social difficulties

### ***Other Measures***

Other measures for which results will be reported here include two parent-report measures, namely the Child Behaviour Checklist (CBCL: Achenbach & Edelbrock, 1983) and the Child Adaptation and Functioning Scale (CAFAS: Hodges, 1998). Six child-report measures will also be used, including two measures of depression and anxiety, the Child Depression Inventory (CDI: Kovacs, 1992) and the State and Trait Anxiety Scale for Children (STAIC: Spielberger, 1970), as well as Harter’s Self-Perception Profile (Harter: Harter, 1985) and the Child Attachment Interview (CAI: Target et al., 2000). In addition, a short form of the Wechsler Intelligence Scale for Children - Third UK edition (WISC-III<sup>UK</sup>) will be administered to obtain an estimate of IQ, and the Clinical Evaluation of Language Fundamentals-Revised (CELF-R: Semel et al., 1987) will be administered to assess expressive language abilities. These measures have been presented in detail in Chapter 3.

### ***Procedure***

Both the HSS interview procedure and the Anna Freud Centre Standardisation Study of which this study forms a part were presented in Chapter 3. Interviews were conducted in a quiet room either at school, at home, or at the Anna Freud Centre, over the course two to three sessions. All the interviews were videotaped. On the average, the HSS took 15 minutes to complete. Thirty children who agreed to participate in the test-retest study repeated the HSS interview after a 3-month interval. Approximately 50% of the families, who participated in the study at time 1, returned 1 year later and then again

after 2 years, to complete the same battery of tests.

The HSS is introduced by saying to the child: "Here are some stories and some questions. I am going to read out loud the stories, and I would like you to listen carefully and then help me with the questions at the end of each story". Each story is then read out to the child. The sheet with the story and drawing remain in front of the child to serve as a memory aid and thus reduce any memory effects. Each story is followed by two test questions; firstly a comprehension question: "Was it true what X said?" and secondly, a justification question: "Why did X say that?". In order to answer the justification question, the child needs to understand that what is said by the story character is not meant literally. The administrator repeats the comprehension question until the child correctly answers it. In the rare cases where it is necessary, the administrator may indicate that what is said is not literally true by saying something simple such as "Well no, what X said is not really true". The justification question which follows tests whether or not the child understands the mentalisation leading to the statement which is not literally true. Only the response to this question is scored.

### ***Raters and Coding Procedure***

Five raters were trained to use the original HSS coding system developed by Shand (1996). Three raters had completed 3 years of undergraduate psychology training and two had post-graduate qualifications in psychology. Four were female and one male.

A revision of the original coding manual was necessary because the raters could not reach agreement after several trials. Close examination of the children's responses in relation to specifications in the manual pointed to conceptual problems within the original coding system. The process of revision involved discussion, clarification and re-conceptualisation of the approach used in the original coding manual. This process took several months.

Approximately 8 hours of training comprising ten interviews were required for raters to become familiar with the new version of the coding manual. Once raters were able to reach 80% agreement among themselves on the training interviews, they received 30 new transcripts of videotaped HSS for the interrater reliability study. This sample was selected to include a roughly even number of boys and girls of all age groups, as well as a range of types and levels of psychopathology. Rating time was approximately 15 minutes per interview.

### ***Planned Data Analyses***

To determine the interrater reliability, the intraclass correlations (ICC) using Bartko's two-way random effect model are computed; these provide an estimate of

agreement between raters for the scores on the individual stories, as well as for the total scores (Bartko, 1976; W. T. Carpenter, Bartko, C. L. Carpenter, & Strauss, 1976). Using the guidelines set down by Endicott and Spitzer (1978) for interpreting ICC's, values above .75 will be considered as indicative of good reliability; between .50 and .75, as fair; and values below .50, as reflecting poor reliability<sup>3</sup>. To establish the stability of the HSS over time, Pearson product-moment correlations ( $r$ ) between time 1 and time 2 scores over a 3-month test-retest interval, as well as over a 1-year period, are calculated. Following Murphy and Davidshofer (2001), moderate test-retest correlations of .6 and above will be considered as acceptable; test-retest correlations of .5-.6 will be regarded as low, and below .5 as poor.

To examine the factorial structure of the HSS, stories with good interrater reliability using the revised HSS coding manual are selected, and a factor analysis is performed to investigate the dimensionality of the HSS. Next, the internal consistency reliability of the stories is evaluated using Cronbach's alpha. Following Kline's (2000) recommendations, scale alphas of .7 and above are considered as indicative of good internal consistency.

The relationships between HSS and age, IQ, expressive language, as well as demographic variables, gender and family composition are examined using Pearson product-moment correlations ( $r$ ) and  $t$  tests. With regard to the construct validity, it is expected that theory of mind performance on the HSS will show correlations of moderate strength, i.e., no higher than .5, with expressive language abilities and intelligence. Subsequently, significant relationships are taken into account in further analyses. In order to determine if psychopathology and social adaptation constitute good predictive factors of theory of mind as measured by the HSS, a stepwise multiple regression analysis is employed. The data set is then optimised with Full Information Maximum Likelihood (FIML) estimates that are computed using the AMOS software (Arbuckle, 1994), with estimates computed in cases where at least 60% of data is available. The regression analysis is then repeated 1) determine whether or not the increase of power through the replacement of missing data reveals any additional relationships and 2) investigate whether or not self-esteem (as measured on the Harter) and anxiety (as measured on the STAIC) contribute to the prediction of theory of mind (as measured by the HSS).

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<sup>3</sup> Jones, Reid and Patterson (1973) suggested .70 agreement as an acceptable level when complex coding schemes are used, while Gelfand and Hartmann (1975) recommend .60.



To evaluate the discriminatory ability of the HSS, differences in HSS performance as a function of attachment security are investigated using a one-way analysis of covariance (ANCOVA), after taking into account the effects of age and IQ. Finally, HSS performance as a function of clinical levels of behavioural and emotional difficulties on the (CDI and CBCL) is investigated using t-tests.

## **Results**

### ***Performance of the HSS Scale***

Results indicate that primary school-aged children have scores distributed across the full range of the 4-point scale, on all the stories of the HSS. Mean scores on stories ranged from .85 to 1.83, showing that scores tended to be towards the centre of the rating system. The *SDs* of the stories ranged from .61 to 1.06, and the *SD* of the HSS scale was 4.47, confirming that children in this sample showed a range of theory of mind abilities, (see Table 5).

### ***Reliability of the Revised HSS Rating System***

The reliability of the HSS was evaluated using the standard indexes of reliability, including interrater reliability, internal consistency and test-retest reliability.

#### ***Interrater Reliability***

Interrater reliability was investigated using intraclass correlations (ICC's: Bartko, 1976) which, unlike less stringent statistic such as Pearson correlations, take into account not only the order (or direction) of possible differences between raters but also the magnitude of such differences.

The resulting reliabilities range from .57 (idiom) to .74 (pretend) with a median of .70 (see Table 5). The ICCs of the two remaining stories, namely the Lie story and the Appearance/Reality story, are poor, and for this reason, they are excluded from subsequent analyses. Once raters had separately rated the stories, they compared their scores and rendered consensus ratings arrived at through discussion. On the rare occasions when raters were unable to reach consensus, the author served as mediator. Consensus ratings were factored into subsequent analyses.

Table 5

*HSS: Means, Standard Deviation and Interrater Reliability*

Stories	<i>M</i>	<i>SD</i>	Min	Max	<i>ICC</i>
Pretend	1.22	.83	-1.0	2.0	.74
Lie	1.83	.61	-1.0	2.0	.48
Joke	.94	.83	-1.0	2.0	.71
White Lie	1.58	.81	-1.0	2.0	.67
Idiom	1.21	.81	-1.0	2.0	.57
Misunderstanding	.96	1.05	-1.0	2.0	.69
Politeness/Sarcasm	.85	.85	-1.0	2.0	.70
Persuade	.94	1.06	-1.0	2.0	.65
Contrary Emotion	1.50	.77	-1.0	2.0	.69
Appearance Reality	1.50	.80	-1.0	2.0	.36
Scale	9.22	4.47	-8.0	16.0	.79

Note. *N* = 109 for descriptive statistics, and *n* = 30 for the ICC's

### ***Factor Analysis of the HSS***

Before doing the factor analysis, a correlation matrix was used to examine the underlying structure of the correlations among the different stories. Pearson product-moment correlations (*r*) were used and results are presented in Table 6.

The results show that there were statistically significant positive correlations between all the stories; Pearson's *r* ranged from .21 to .43, which indicates that the performance on each story generally correlates well with performance on other stories. This suggests that the stories generally measure a related ability, and at a comparable level of difficulty.

Table 6

*HSS: Correlation Matrix Used in the Factor Analysis*

Stories	1	2	3	4	5	6	7	8
1. Pretend	-	.40**	.30**	.34***	.23*	.23*	.34***	.39***
2. Joke		-	.40***	.28**	.34***	.20*	.35***	.26***
3. White Lie			-	.35***	.37***	.26**	.42***	.41***
4. Idiom				-	.32**	.37***	.32**	.35***
5. Misunderstanding					-	.21*	.35***	.27**
6. Politeness/Sarcasm						-	.26**	.32**
7. Persuade							-	.43***
8. Contrary Emotion								-

N = 109, \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ 

The dimensionality of the eight stories with good interrater reliability was evaluated using principal component factor analysis. The results, presented in Table 7, indicate that all the stories loaded on one component, with factor loadings ranging from .54 to .69, explaining 38.4% of the variance. The solution could not be rotated.

Table 7

*HSS: Item Loadings and Percentage of Variance Explained by Principal Component*

Stories	Component 1
Pretend	.59
Joke	.61
White Lie	.69
Idiom	.64
Misunderstanding	.60
Politeness/Sarcasm	.55
Persuade	.65
Contrary Emotion	.69
% of Variance Explained	38.4

N = 109

### ***Internal Consistency of the HSS***

Item-total correlations were calculated for the eight stories with good interrater reliability; they ranged from .39 to .56. Internal consistency for the eight items was good, with Cronbach's  $\alpha = .79^4$  (see Table 8).

The finding that the internal consistency of the scale was good supports the conclusion from the factor analysis that the HSS assess a single ability when used with this age group. Consequently all individual scores were aggregated to reflect one composite total score.

Table 8

#### ***HSS: Item-Total Correlations and Alpha Coefficient***

Stories	Item-Total Correlation
Pretend	.48
Joke	.49
White Lie	.55
Idiom	.51
Misunderstanding	.46
Politeness/Sarcasm	.39
Persuade	.55
Contrary Emotion	.54
Alpha ( $\alpha$ )	.79

$N = 109$

### ***Test-Retest Reliability***

Pearson product-moment correlation ( $r$ ) was used to test the temporal stability of children's performance on the HSS over 3 months, and after 1 year. As shown in Table 9, the test-retest reliability of HSS scores after a 3-month interval was significant, but low ( $r = .40$ ,  $p = .017$ ). The stability over 1 year was higher, with the correlations between HSS

<sup>4</sup> Cronbach alpha coefficient of .70 is considered acceptable for reliability (Kline, 2000).

scores at time 1 and HSS scores after a 1-year interval significant and moderate ( $r = .59$ ,  $p = .001$ ).

Table 9

*HSS: Three-Month and One-Year Temporal Stability*

Interval	Time 1			Time 2		<i>r</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Three month	30	14.7	3.3	15.3	3.4	.40*
One year	53	14.5	3.5	15.2	3.3	.59***

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

### *Validity of the Happé's Strange Stories*

Three types of validity are assessed; construct, predictive, and discriminant validity. These are assessed in relation to different hypotheses which will be presented below.

#### *Relationship between Performance on the HSS and Age, IQ and Expressive Language*

In order to assess the validity of the HSS, Pearson product-moment correlations were computed to examine whether or not a relationship existed between HSS performance score and age, IQ and expressive language scores. As can be seen from Table 10, all the correlations were statistically significant; they ranged from .38 to .47. These results suggest that there are definite age, IQ and expressive language effects with regard to performance on the HSS, with children who are older and who have higher IQ's and better expressive language abilities performing better on the HSS. These relationships will be considered in future analyses, with the exception of expressive language scores (because of the small sample for which data was available).

To determine whether or not verbal IQ and expressive language measure different abilities, the relationship between expressive language abilities and intelligence was examined. The relationships between expressive language abilities and Full Scale IQ ( $r = .28$ ) and Verbal IQ ( $r = .19$ ) were weak and non-significant.

Table 10

*HSS: Correlations with Age, IQ and Expressive Language*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>r</i>
Age	109	8.7	1.7	5.2	11.9	.38**
WISC Full IQ	98	97.9	21.1	52	146	.47**
WISC Verbal	98	101.8	21.4	52	155	.42**
WISC Performance	98	93.1	22.4	46	143	.41**
CELF-R	43	88.5	14.8	64	137	.40**
Expressive Language						

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ 

### ***Relationship between Performance on the HSS and Demographics, Gender and Family Composition***

Student *t*-tests were used to investigate whether or not performance on the HSS was associated with socio-economic status (SES), gender and family composition.

The results show that with respect to family composition, children living in single-parent families, with mum only, had significantly higher HSS scores ( $M = 10.27$ ,  $SD = 4.88$ ) than did those living in two-parent families ( $M = 8.20$ ,  $SD = 4.89$ ),  $t(98) = -2.41$ ,  $p < .05$ . No gender effect was present,  $t(107) = -1.05$ ,  $p = .23$ .

There were no other significant results. The HSS performance of children with siblings ( $n = 42$ ) and that only children ( $n = 40$ ) were not found to differ significantly ( $t(80) = 1.71$ ,  $p = .09$ ), although the mean scores of children with siblings were generally higher ( $M = 10.10$ ,  $SD = 3.99$ ) compared with those of only children ( $M = 8.35$ ,  $SD = 5.18$ ). Using the highest states occupation in the family as a proxy for socio-economic status, the difference between the HSS performance of children from working class households ( $n = 40$ ), ( $M = 9.49$ ,  $SD = 4.62$ ) and middle class households ( $n = 53$ ), ( $M = 8.88$ ,  $SD = 4.16$ ) was non-significant,  $t(91) = .66$ ,  $p = .51$ , *ns*. Only in two cases did respondents indicate that they spoke another home language in addition to English, and they were excluded from further analyses because they had extremely low mean scores ( $M = -2.00$ ,  $SD = 8.49$ ) when compared with those who spoke only English at home ( $M = 1.04$ ,  $SD = 3.99$ ).

### ***Relationship between Performance on the HSS and Self-Esteem***

Pearson product-moment correlations were used to examine the relationship between children's theory of mind performance on the HSS and their self-esteem ratings using Harter's Global Self-Esteem Scale. No evidence of a relationship between theory of mind and self-esteem was evident; the correlation was low and non-significant ( $r = .16$ ).

### ***Contributions of IQ, Age, Psychopathology and Social Adaptation to HSS***

The factors hypothesised to be predictors were first examined using a correlation matrix (see Table 11). Expressive language was not taken as a potential predictor because of the small sample for which data was available. Stepwise multiple regression was employed to determine if addition of scores on measures of psychopathology and adaptation improved the prediction of performance on the HSS beyond that of IQ and age. With performance on the HSS as the dependent variable, predictors were entered in three blocks. Verbal IQ was entered in block one, age in block two, and psychopathology CBCL (internalising, externalising and total scores), CDI, and CAFAS total scores in block three. The Harter and STAIC scores were not included in this regression, as this would have reduced the number of cases with data for all measures to 50.

Table 11

#### ***HSS: Correlations with Potential Predictors of Theory of Mind***

Stories	1	2	3	4	5	6	7	8
1. HSS	-	.38***	.42***	.05	.24*	.19	.09	.31**
2. Age		-	.08	.23*	.08	.09	.07	.07
3. Verbal IQ			-	.13	.22*	.23*	.24*	.14
4. CBCL (Int)				-	.62***	.89***	.48***	.20
5. CBCL (Ext)					-	.88***	.53***	.31*
6. CBCL (Total)						-	.58***	.30*
7. CAFAS (Total)							-	.35**
8. CDI (T score)								-

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 12 displays the unstandardised regression coefficients ( $B$ ), the standard error and the standardised regression coefficients ( $\beta$ ), intercept  $R^2$  and  $\Delta R^2$  after entry of all the independent variables. After step 1, with age in the equation,  $R^2 = .18$ ,  $F(1, 63) = 13.55$ ,  $p < .001$ . This indicates that age makes a significant contribution to the prediction of children's performance on the HSS and accounts for 18% of explained variance in theory of mind on the HSS. After step 2, with verbal IQ added to age in the prediction of HSS performance,  $R^2 = .30$ ,  $F(1, 62) = 10.90$ ,  $p < .002$ . Addition of verbal IQ to age resulted in a significant increment in  $R^2$ , explaining an additional 12% of variance in HSS performance. At step 3, with the CDI score entered,  $R^2 = .35$ ,  $F(1, 61) = 4.88$ ,  $p < .03$ . The CDI was the only variable entered in block three that resulted in a significant increment in HSS variance after controlling for the effects of age and verbal IQ, explaining an additional 5% of variance in theory of mind on the HSS. After step 3, the model consisting of age, verbal IQ and CDI, explained 35% of the variance. The partial correlations of the excluded variables and HSS performance were all non-significant: CBCL-internalising (-.04), CBCL-externalising (-.08), CBC-total score (-.09) and CAFAS (.08). The same pattern of results was found after two children with IQs below 70 were excluded.

***Exploratory Regression Analysis using the Full Information Maximum Likelihood Estimates.***

Another exploratory regression analysis was conducted using the Full Information Maximum Likelihood Estimates (Arbuckle, 1994) to optimise our database through estimation of missing measure scores. The principal reasons for missing data were the late introduction of certain measures to the standardisation study, and the fact that families frequently cancelled appointments especially within the clinical sample and did not return self-report forms, consequently, complete data for the full battery was not available. There was no evidence that data was missing in a systematic way that would contribute to bias in the estimation of missing values from existing data. The maximum number of estimations was calculated for the Harter; values were estimated for 38 cases in order to produce full data for 98 subjects in total.

Exactly the same procedure was used as for the first regression analysis, but at step 3, STAIC trait and state anxiety, and Harter's Global Self-Esteem were added as potential predictors. The results largely reflect that of the first analysis, with the exception that trait anxiety as measured on the STAIC now also entered as a predictor of HSS performance and explained an additional 5% of the variance. As with depression, increases in trait anxiety in children were associated with lower scores on the HSS.



Table 12

*HSS: Stepwise Regression Analysis for Predictors of Theory of Mind Performance*

Predictor	<i>B</i>	<i>SE</i>	$\beta$	$R^2 / \Delta R^2$
Step 1				
Age	8.79	.03	.42	
				.18***
Step 2				
Age	8.21	.03	.39	
Verbal IQ	.91	.31	.35	
				.12***
Step 3				
Age	7.57	.20	.36	
Verbal IQ	.88	.27	.34	
CDI	-8.35	.04	-.23	
				.05*
Full Model				.35**

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ ***Clinical Levels of Psychopathology and Performance on the HSS***

One-way analysis of covariance (ANCOVA) was used to determine whether or not children with CBCL and CDI scores in the clinical range differed significantly from others with respect to their theory of mind abilities as measured on the HSS, after taking into account the effects of age and IQ. ANCOVA was used to investigate differences between clinical and non-clinical groups based on: 1) CBCL Total Scores; 2) CBCL Internalisation Scale; 3) CBCL Externalisation Scale; and 4) CDI standardised scores. For the respective analyses, the independent variables were clinical status on the CBCL (where clinical was defined as T scores of 70 and above, and non-clinical as T scores below 70) and clinical status on the CDI (where clinical was defined as T scores of 70 and above, and non-clinical as T scores below 55). For each of the four independent

variables, a set of analyses was conducted with performance on the four AT Scales (Accuracy, Justification, Impact and Challenge) as the dependent variables. The covariates were age and verbal IQ. The assumptions of normality of sampling distributions, linearity, homogeneity of variance, homogeneity of regression and reliability of covariates were evaluated as satisfactory. In the subsequent analyses, cells were weighted by sample size to adjust for unequal  $n$ 's.

The results revealed no significant differences in theory of mind performance on the HSS when comparing children with CBCL and CDI scores in the clinical range with others, after adjusting for the effects of age and IQ (see Tables 13, 14, 15 and 16).

Table 13

*HSS: Performance of Children with Clinical and Non-Clinical CBCL Scores*

Scale	Non-Clinical					Clinical				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
CBCL Internalising Scale										
HSS	52	9.63	4.10	9.73	.51	40	9.60	4.68	9.48	.58
CBCL Externalising Scale										
HSS	63	9.56	4.80	9.25	.46	29	9.76	3.18	10.41	.69
CBCL Total Score										
HSS	56	9.73	4.58	9.58	.49	36	9.44	4.00	9.68	.62

Table 14

*HSS: ANCOVA Comparing Children with Clinical and Non-Clinical CBCL Scores*

Source of Variance	<i>Adjusted</i> <i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i> <i>R</i> <sup>2</sup>
HSS							.28
CBCL Internalising	1.34	1	1.34	.10	<i>ns</i>	.001	
Covariates							
Age	186.24	1	186.24	13.74	***	.135	
Verbal IQ	288.77	1	288.77	21.30	***	.195	
Error	1193.25	88	13.56				
HSS							.29
CBCL Externalising	25.47	1	25.47	1.91	<i>ns</i>	.021	
Covariates							
Age	185.55	1	185.55	13.97	***	.137	
Verbal IQ	314.26	1	314.26	23.65	***	.212	
Error	1169.13	88	13.29				
HSS							.28
CBCL Total	.20	1	.20	.02	<i>ns</i>	.000	
Covariates							
Age	183.89	1	183.89	13.55	***	.133	
Verbal IQ	286.82	1	286.82	21.13	***	.194	
Error	1194.39	88	13.57				

\**p* < .05 \*\**p* < .01 \*\*\**p* < .001.

Table 15

*HSS : Performance of Children with Clinical and Non-Clinical CDI Scores*

Scales	CDI					CDI				
	Non-Clinical					Clinical				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
HSS	61	10.72	3.48	10.19	.50	31	7.45	5.05	8.51	.76

Table 16

*HSS: ANCOVA Comparing Children with Clinical and Non-Clinical CDI Scores*

Source of variance	<i>Adjusted</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i>
	<i>SS</i>						<i>R^2</i>
HSS							.30
CDI	37.78	1	37.78	2.87	<i>ns</i>	.032	
Covariates							
Age	55.58	1	55.58	4.23	*	.046	
Verbal IQ	273.51	1	273.51	20.81	***	.191	
Error	1156.82	88	13.15				

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .***Attachment Security and Performance on the HSS***

The impact of child attachment security on HSS performance was investigated next using a one-way analysis of covariance (ANCOVA) to compare the performance of children classified as secure or insecure in terms of attachment (according to the CAI), again taking into account the effects of age and IQ. The dependent variable was HSS

performance, and the independent variable was security of attachment (secure or insecure). The covariates were age and verbal IQ. The ANCOVA was significant,  $F(1, 60) = 4.07, p < .05$ . The means of HSS scores of insecure and secure children, adjusted for age and IQ, were ordered as expected, with insecurely attached children generally having lower HSS scores ( $M = 9.12$ ) than securely attached children ( $M = 11.42$ ) (see Table 17). Results summarised in Table 18 show that the relationship between attachment and the adjusted HSS score was significant but low, with  $\eta^2 = .071$ , indicating that attachment classification explained 7% of the variance of this scale.

Table 17

*HSS: Performance of Children with Secure and Insecure Attachment Classifications*

Scale	Secure					Insecure				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
HSS	15	11.73	3.39	11.42	.94	44	9.07	4.68	9.12	.55

Table 18

*HSS: ANCOVA Comparing Children with Secure and Insecure Attachment Classifications*

Source of variance	<i>Adjusted</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i>
	<i>SS</i>						<i>R^2</i>
HSS							.35
Secure/Insecure	55.85	1	55.85	4.20	*	.071	
Covariates							
Age	145.88	1	145.88	10.98	**	.166	
Verbal IQ	208.34	1	208.34	15.68	***	.222	
Error	730.60	55	13.28				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

## **Discussion**

The aims of this study were two-fold: 1) to investigate the psychometric properties of the HSS when used with the adapted coding system and manual, including its interrater reliability and its qualities as a scale, and then 2) to examine the relationship between HSS performance and key demographic variables (including age and IQ), as well as measures of psychopathology, adaptation and attachment. In the following section, the principal findings are briefly summarised and then discussed in turn.

### ***Reliability of the HSS***

The findings indicate that the psychometric properties of the HSS are solid. Interrater reliability was found to be good using the newly adapted coding system and coding manual. The HSS, after exclusion of one item, had good internal consistency, and the results from a factor analysis, as well as the good scale alpha, indicate that the HSS measures a single construct. With regard to stability over time, the correlations over 1 year show moderate stability, although stability over a shorter period was less satisfactory. This pattern of findings suggests that theory of mind (as measured by the HSS) is a relatively stable capacity of children, but that children, perhaps especially children recruited from referrals to child and adolescent mental health services, and who may be experiencing significant personal difficulties, are less motivated to re-engage with these tasks after a 3-month period.

Taken together, these findings regarding reliability confirm that the HSS is a reliable measure of primary school-aged children's theory of mind abilities.

### ***Association with Demographic Variables, Age and IQ***

As predicted, children's theory of mind abilities as measured by the HSS showed significant correlations with intelligence and expressive language abilities. This finding is not unexpected, given the ample evidence that language abilities and theory of mind are generally linked, and given that the HSS is essentially a language based test. These observations gave rise to the concern that the HSS might be more a test of verbal ability than of test theory of mind, but the results indicate that the correlation is not unduly high and confirm that the HSS measures an ability that goes beyond language ability and verbal IQ.

From a methodological perspective the English HSS cannot be considered an appropriate test of theory of mind abilities for children who have a different home language, and caution must be exercised when deciding whether or not to use this test

with children who have a working knowledge of English, but whose mother tongue is another language. This conclusion is based on the impact of language on theory of mind performance (as measured by this test), as well as on the extremely low HSS scores observed for the two children in the sample who spoke English as a second language at home. The impact of bilingualism, or multilingualism on theory of mind development, and the related question concerning which tests would be appropriate for these children, are of considerable interest, especially when working with immigrant children and children adopted from other countries.

As hypothesised, there were significant age effects, and the study results indicate that intentional understanding increases significantly from age 5-11. With regard to family composition, the results were somewhat unexpected.

Contrary to expectation, children from single-parent families performed significantly better on the HSS than did children from two-parent families. This finding requires further investigation and replication, but it is possible that children who grow up in single-parent families spend more time interacting with parents and have more opportunities to observe and learn how to interpret speech that is non-literal, and perhaps more opportunities to develop theory of mind in a general sense. Another, not unrelated, explanation could be that single parents demand more understanding from their children and that this contributes to a more rapid development in understanding of intentionality in communication or to the development of theory of mind in general. In the present study, the difference between the theory of mind performance of children with siblings and that of only children was not statistically significant. This suggests that the advantages of having siblings with regard to theory of mind development are not as marked during the primary school years as during the pre-school years.

### ***Psychopathology as Predictor of Performance on the HSS***

As hypothesised, this study shows that depressive symptomatology and trait anxiety based on self-reports by children aged 5-11, made a significant addition to the prediction of performance on the HSS. This finding that depression and anxiety make a significant contribution to predicting theory of mind performance as measured by the HSS, is new and exciting for a number of reasons. Previous research, such as that reported by Corcoran (2000), failed to identify theory of mind problems associated with affective disorders. From a methodological perspective this findings is of importance because it demonstrates that HSS when used to measure theory of mind abilities of children aged 5-11 exhibits the variance and sensitivity necessary to identify associations

between theory of mind capacities and affective difficulties. More generally, it suggests that when theory of mind tests are appropriately pitched for the age group under study, it is possible to observe sufficient variability in children's theory of mind abilities and thus to identify links with psychopathology.

From a theoretical perspective, the association between self-reports of affective symptomatology and theory of mind performance is not entirely surprising, especially in the light of the new evidence from neuroimaging studies suggesting that mentalisation and affect are inextricably linked. The findings of the present study point to a definite association both between level of depression and anxiety, and the capacity of children to make basic discriminations and attributions regarding the intentions of others when interpreting speech. At this point, we have to be content with speculating about causality and pathways, given that symptomatology and theory of mind were concurrently assessed. There are a number of possible explanations. It could be that deficits and delays in the development of the capacity to interpret the intentions of others make children particularly vulnerable to depression and anxiety, or it could be that more general deficits in theory of mind abilities play a role here. Alternatively, it may be that depression and anxiety impairs children's motivation or ability to think about intentionality. Or, finally, it may be that the same factors underlying depression and anxiety, also impact on the ability to understand the intentions of others.

The lack of significant findings with respect to behavioural difficulties is somewhat surprising at first glance, given that it seems reasonable to expect that difficulties in discerning the intentions of others will be associated with interpersonal difficulties. The study findings are, nonetheless, in line with findings of previous studies such as those of Happé and U. Frith (1996), which failed to find significant relationships between theory of mind and behavioural difficulties. This leads to the conclusion that children with behavioural difficulties do not differ significantly from their normal peers in their ability to identify the intentions of others when in emotionally neutral situations, such as test situations. It may be, as suggested by Happé and U. Frith (1996), that these children have a theory of bad minds or to use Blair's (1995) terms, it may be that they lack empathy, or as Dodge et al. (1984) assert, it may be that they have negative attribution biases and make distorted appraisals of the intentions of others as overly negative. Alternatively, it may be that problems with executive control make it difficult for these children to use their theory of mind abilities when emotionally aroused, for example, when threatened by hurt, rejection or humiliation. Finally, there is the possibility that methodological factors such as the reliance on parent-reports of



behavioural difficulties, rather than on direct observation or on peer or teacher reports, may have contributed to the lack of significant findings here.

### ***Clinical Levels of Psychopathology and Performance on the HSS***

In this sample of primary school-aged children referred to mental health services, theory of mind (as measured by the HSS) was not found to differ significantly as a function of whether children had clinical levels of depression (as measured on the CDI) or clinical levels of behavioural and emotional difficulties (as measured on the CBCL), after considering the effects of age and verbal IQ.

### ***Attachment Security and Theory of Mind***

As hypothesised, there were significant differences in the theory of mind abilities of children as a function of their attachment security. Securely attached children, when compared with insecurely attached children of the same age and IQ, performed significantly better on the HSS, indicating that secure attachment is associated with a greater ability to understand the intentions of others and to understand what people really mean when they speak. While there is evidence that attachment security (as measured at 1 year of age) predicts theory of mind performance at the end of the pre-school years (Fonagy, Redfern et al., 1997; Main, 1991), the results of this study indicate that securely attached children still has this advantage with respect to theory of mind performance into the primary school years. As was theorised by Fonagy, Redfern, et al. (1997) it is possible that securely attached children develop superior theory of mind abilities because they feel at liberty to explore the minds of other. It may also be, as suggested by Harris (2000), that the parenting qualities that facilitate attachment security, that are in turn associated with parent-child emotion narratives, facilitate affective understanding and theory of mind development. Fonagy and Target (2003) argue that the development of the ability to understand the minds of others is inextricably linked to attachment. The results of this study provide support for theories postulating that of the development of theory of mind, as well as the development of the understanding of the intentions of others are determined by relationships that the child develops with caregivers (Fonagy, Redfern et al., 1997; Harris, 2000), and these do not develop a biologically predetermined course.

### ***Future Considerations***

This study provides provocative evidence of the link between mentalisation about the intentions of others crucial to understanding everyday communication, and affective

symptomatology, including depression and anxiety. Significant differences in intentional understanding were also found between securely and insecurely attached children. However, causality was not addressed by this study, given that theory of mind and symptomatology and attachment were assessed concurrently. A longitudinal study will be required to explore causality.

The lack of significant findings with regard to behavioural difficulties and adaptation also requires further investigation. It is possible that the use of parent-reports which may reflect parental psychopathology and distortions in parental representations of their children may have contributed to the lack of significant results. Independent reports by teachers, or observations undertaken by researchers at home and at school, may provide a more reliable indicator of behavioural and adaptation difficulties. Another factor that has to be considered is that HSS data was only available for children referred to child mental health services; we would expect difficulties in identifying the intentions of others to result in interpersonal difficulties and to contribute to behavioural difficulties. This warrants further investigation in a study designed to include both children who meet conduct disorder criteria and a normal control group.

The findings from the current study suggest that there is a link between both depressive symptomatology and trait anxiety and the ability to consider the intentions of others, an ability considered to be indicative of theory of mind ability. However, the question as to whether or not affective symptomatology is also linked more generally to children's own ability to see themselves in intentional terms and to take an intentional stance, which needs further investigation. Also warranting further study is the clarification of the direction of the relationship between theory of mind and affective difficulties, so as to determine whether the latter difficulties would respond better to treatments that focus on the development of mentalising capacities.

A further question that needs to be addressed is the link between performance on a language orientated theory of mind task, such as the HSS, and the ability to identify mental states which are expressed non-verbally, as assessed, for example, by the Eyes Task (Baron-Cohen, Jolliffe et al., 1997). Further research using measures of both theory of mind and mindreading, could help to clarify their developmental relationship, and determine whether or not they are associated with psychopathology.

### **Conclusion**

After confirming that the psychometric properties of the HSS, including interrater reliability and internal consistency, were robust, the study results indicated that the HSS is an appropriate test of theory of mind abilities for children age 5-12. Performance on this theory of mind measure which assessed the ability to consider intentionality in interpreting communication was demonstrated to be related not only to verbal ability and age, but also to affective symptomatology and attachment. These findings are highly interesting, as previous studies assessing theory of mind were not able to confirm the link with affect, despite the fact that this link is strongly suggested both theoretically and by current evidence from neuroimaging studies.

Results from this study confirm that when theory of mind tests are selected carefully and are appropriate for the age group being investigated, it is possible to demonstrate that a relationship exists between theory of mind abilities and affective symptomatology. The study results indicate that children who report higher rates of depressive and anxiety symptomatology have lower theory of mind scores on this test measuring the ability to interpret communication in terms of the intentions of the speakers, rather than in terms of what is said literally. As such, this study provides evidence in support of the notion that affect and mentalisation are inextricably linked.

## **CHAPTER 5**

### **PSYCHOMETRIC AFFECT TASK**

This chapter will focus on the psychometric properties of the Affect Task (AT), a new measure designed to assess affective understanding in primary school-aged children; it evaluates, in particular, the dimensions that have been identified by research as salient dimensions of affective understanding namely: 1) knowing which affects will be evoked; 2) knowledge of the causal connections between feelings and contexts; 3) understanding how feelings change; 4) understanding emotional dissemblance; and 5) understanding why someone else may have a very different, unexpected reaction vis-à-vis our own reaction.

The goals of this chapter are to examine the reliability of the AT and to explore whether affective understanding (as measured by the AT) is primarily determined by age and intelligence, and to investigate whether or not the AT is sensitive to problems in social functioning, psychopathology, self-esteem and attachment. In sum, the aim is to establish whether or not the AT is robust psychometrically, and to examine the construct validity of the AT when used in a sample of primary school children aged 5-12.

#### **Introduction**

As Shields and Cicchetti (1997) have pointed out, our understanding of children's emotional development is still at a stage such that measure development can make an important contribution to research. Despite the last decade of rapid growth in knowledge of children's emotional development, there are still major gaps in our understanding of this process. Consequently we are still unable to identify the salient signs of risk, and thus to identify children who are at the highest risk. At this stage, the relationship between emotional understanding, i.e., the way children understand and interpret emotional cues, and emotional regulation is still inadequately understood, although there is research linking both to relational and behavioural difficulties. It remains unclear to what extent, as Harris (2000) has put it "Children's developing understanding of emotion is simply an epiphenomenon of the underlying process of emotion. Understanding may operate at a 'meta' level, sealed off from the underlying emotional process that is its subject matter.

To take a concrete example, it is possible to assert that a child functions at two separate levels: On one level there is the child's display of sadness; at a separate level, there is the child's capacity for reporting on and ruminating about that experience. Increasing sophistication at the latter level may have few or no repercussions for processing at the former level" (p. 290).

Determining the relationship between the understanding of affect and feelings and affect regulation is of considerable importance, especially in considering whether or not talking therapies, which also construct new narratives and increase affective understanding, can be expected to impact on severe difficulties in affect regulation. Research progress with regard to our understanding of causal pathways, risk, and intervention is hampered by the lack of developmentally appropriate and validated assessment tools. In this context the Affect Task, a new instrument developed to assess the emotional understanding of children aged 6-11, presents considerable promise.

The aim of this study is to present the development of the AT and its coding system and to examine whether or not its psychometric properties indicate that it is a reliable and valid measure of primary school-aged children's affective understanding.

### *Different Aspects and Sophistication of Affective Understanding*

Developmentalists such as Saarni (1999) have differentiated an astonishing range of affective understanding abilities. The AT focuses on five skills that are thought to develop during the primary school years. Two skills involve what can be regarded as essential affect knowledge, including the ability to know which affects are likely to be evoked in a given situations and the ability to understand and think clearly about the causal links between affects and situations. The other three skills involve more complex, or sophisticated, understanding of affects. In Fonagy and Target's (2003) theoretical model, this growing sophistication in understanding the qualities of mental states is developmentally significant, in that it makes possible the increased mastery of children's emotional reactions and emotional worlds this makes possible. The five skills assessed by the AT will be briefly discussed in the following section.

### *Understanding Affects Evoked by Particular Situations*

Research suggests that ability to identify more complex social and what is referred to as the self-conscious emotions such as pride, guilt, shame, embarrassment, and empathy, emerges at the age of 6 (Arsenio & Kramer, 1992; Denham, 1998). With regard to understanding ambivalence and mixed emotions, Harter (1999) has argued that only from the age of 7 do children start to understand that others can experience differing

emotions of the same valence, such as anger and sadness; Harter also contends that at age 11 are children able to consider the possibility of having emotions of opposite valences towards the same person. Studies in which scaffolding is provided have shown that, in fact, these abilities emerge earlier (Wintre & Valence, 1994); the responses of 8-year-olds indicated that they were able to consider the possibility that multiple emotions of different valences and intensities could result from a given emotional stimulus. Peng et al. (1992), using a story involving a child who finds his lost pet, only to realise that it is injured, found that when children were told of the mixed emotional reaction of the story character, 6-7 year old children, but not 4-5 year old children were able to consider the possibility of mixed emotional reactions having opposite valences. Denham (1998) explains the difficulties of 4-5 year old children by citing evidence that younger children think concretely about emotions and rely principally on facial expressions (i.e., “Faces can’t go up and down at the same time”). Their limited ability to understand mental processes and their unsophisticated theory of mind (“You can’t think two ways at the same time”) have also been identified as possible obstacles (Harris et al., 1989).

The coding system of the AT Accuracy scale is based on these findings, and scores are given based on children’s ability to consider the possibility that the story characters might have mixed emotional reactions and that the valences of these emotions might be diametrically opposed.

### ***Knowledge of the Causal Connections between Feelings and Contexts***

Narratives about emotionally loaded events are seen as providing the mental scaffolding that helps the child interpret similar events when they subsequently encounter them. Harris (2000) has argued that a child’s knowledge of common emotional scripts, i.e., narratives about emotions and their causes, acts as an organiser of both affect and affective memories. The research evidence indicates that during the pre-school period children see the causes of emotions in terms of goals, and that age 5 marks a shift in perception; at this age, children begin to show the ability to consider personal dispositions and to provide more abstract accounts of the possible causes of a peer’s emotions (Dunn & Hughes, 1998; Fabes et al., 1991; Strayer, 1986).

These findings have informed the approach used in the coding system of the AT Justification scale; thus, scores are based on the extent to which the child shows an understanding of interpersonal determinants when explaining the affective reactions of the story characters. The stories and drawings have all been developed to depict affect provoking events in interpersonal contexts, in order to specifically elicit children’s ability to consider the impact of interpersonal processes on affective reactions.

### ***Understanding Change in Feelings***

Studies of children's ability to understand the impact of time on both happiness and sadness show that this ability emerges during the primary school period, with younger children only understanding shifts from one emotion to another, but not shifts over time of a single emotion (Brown et al., 1991). Children aged 4-16 generally resort behavioural rather than cognitive strategies to change emotions and generally have to be reminded of cognitive strategies before they are able to consider using them (Brown, Covell, & Abromovitch, 1991).

In light of these findings, the coding system of the AT Impact scale evaluates children's capacity to recognise that feelings become less intense over time, and it assessed their knowledge of more sophisticated behavioural and cognitive strategies.

### ***Understanding Emotional Dissemblance***

The ability to understand cultural display rules and to understand the motivations for hiding one's true feelings and for pretending to feel something quite different is essential for interpreting the reactions of others; in addition, these skills have important social and personal advantages. Six-year-olds are generally able to understand why children might wish to hide their true feelings. Results with regard to the emergence of this ability in younger children are divergent. Some studies suggest that pre-schoolers have not acquired the understanding that feelings can be masked or minimised for social or self-protective reasons (Denham, 1989). On the other hand, studies of the appearance/reality distinction from a theory of mind perspective found that pre-school children were, in fact, able to identify how the protagonist was really feeling, despite appearances (Gross & Harris, 1988).

In the context of this study, the coding system of the Internal/External scale is designed to measure children's developing knowledge of emotional dissemblance, as well as their understanding of social rules and personal motivations underlying its use.

### ***Understanding a Surprising Affective Reaction***

Mental reflexivity, i.e., the ability to apply affective understanding creatively when challenged by circumstances which cannot be explained by common scripts, is considered by Fonagy et al. (2000) as an important aspect of sophisticated affective understanding. Mental reflexivity is crucial because social and interpersonal processes require individuals to understand a wide range of reactions to which their existing repertoire of narratives and explanations (or attempts at understanding through identification) do not apply.

With regard to the early development of this ability, Denham and Couchoud's

studies (1990) have shown that pre-schoolers struggle to imagine that others might have feelings different from theirs. The evidence suggests that this ability appears during the early school years; Denham (1998) found that children aged 5 or 6 were able to understand that some children, for example, might be scared of dogs, whereas others might like dogs. Certain children when pressed to explain different reactions to dogs, insisted on reconstructing the situation ("The dog does not have big teeth, so she likes him")(Denham, 1998). This suggests that these children are still unable to consider affective reactions as mental phenomena determined by personal characteristics and preferences, rather than by external reality.

The scoring system of the AT Challenge scale is designed to measure different levels of sophistication in children's ability to use their affective understanding skills reflexively in considering a reaction that falls outside the range of reactions that they are normally confronted with.

### ***Affective Understanding, Social Adaptive Functioning and Psychopathology***

From a theoretical point of view, affective understanding has been explicitly linked to social understanding (Dunn, 1988) and social competence (Denham, 1998). In addition, affective understanding is seen as an essential component of emotional competence (Saarni, 1999) and is linked to self-efficacy and the capacity to regulate, express and communicate emotions. This, in turn, is considered to be central to interpersonal connectedness. The ability to know and understand what one feels and then to express it, together with the ability to imagine and understand someone else's affective reactions and the ability to feel empathy and express it interpersonally, are considered as underlying the quality and depth of interpersonal interactions. This is also the central tenet of the reflective functioning thesis (Fonagy et al., 2002; Fonagy & Target, 2003) which states that: 1) a person's ability to mentalise and to know what they feel and why is intimately connected with their affect regulation and sense of their own agency, and that this in turn affects; 2) to what extent they are likely to consider the mental states, intentions and feelings of others, and that; 3) this orientation with regard to mental states, intentions and affect determines the depth and quality of interpersonal interactions.

The relationship between emotional understanding and social competence, as well as between emotional understanding and prosocial reactions to the emotions of others, has been underscored by results from many different studies (Denham, 1986; Denham & Couchoud, 1990; Denham, McKinley, Couchoud, & Holt, 1990; Field & Walden, 1982; Gnepp, 1989). At an empirical level, there are still considerable gaps in our understanding



of the relationships between emotional understanding, temperament, the regulation of negative affects, inhibitory control and empathy. In particular, little is known regarding the contributions of these factors to the development of child psychopathology, especially in contexts known to be psychopathogenic such as child maltreatment (Greenberg et al., 1995; Smith & Walden, 1999). Parental, family and socio-economic risk factors associated with psychopathology have been relatively well documented, but the question now arises as to which factors are associated with, or mitigate (in certain cases) the risk of psychopathology.

There is a paucity of research investigating emotional understanding in depressed children, but more is known about the association between emotional understanding and disruptive behavioural disorders. A review by Miller and Eisenberg (1988) points to an inverse relationship between antisocial behaviour and emotional understanding. Children with conduct disorders have been shown to have significant deficits in emotional understanding, as assessed by the Kusche Affective Interview (Kusche et al., 1988). However, aggressive children with ADHD do not appear to manifest the same socio-cognitive delay, suggesting that problems with executive control might contribute to the behavioural and social difficulties of this group (Hughes, White, Sharpen, & Dunn, 2000; Barkley, 1997). There is also evidence that children with behaviour problems have fundamental problems in appraisal, show negative attributional biases and tend to misinterpret the pro-social intentions and cues of others as being hostile (Dodge et al., 1984). Research findings indicate that these attributional biases are resistant to correction, as rejected children continue to mistakenly attribute hostile intentions to others even when they are informed of the affect of the protagonists (Keane & Parrish, 1992). As suggested in the previous chapter, these negative expectations may reflect relationship representations based on hostile and conflictual family relationships and on a theory of "nasty minds" (Happé & U. Frith, 1996). At a deeper level, they may also be associated with disorganised attachment, given the converging evidence of links between attachment disorganisation and aggression (Goldberg, Muir, & Kerr, 1995; Hubbs-Tait, Osofsky, Hann, & Culp, 1994; Lyons-Ruth, 1996). Delays in developing false-belief understanding and affective perspective taking, as well as deficits in executive control, have been identified as important contributors to the problems associated with hard-to-manage pre-schoolers (Hughes, 1998) and as likely predictors of anti-social behaviour (Hughes et al., 2000).

One of the aims of the present study is to examine whether or not child affective and behavioural disorders, as well as social adaptive functioning, contribute to predicting

various dimensions of children's affective understanding.

### *Affective Understanding, Intelligence and Expressive Language Abilities*

In contrast to the wealth of research addressing the relationships between children's theory of mind abilities, intelligence and language abilities, there is surprisingly little data on the relationship between affective understanding and children's cognitive and language abilities. The findings showing links between these latter abilities and theory of mind abilities can also be expected to apply to affective understanding, given that affective understanding is thought to overlap with theory of mind, and that similar abilities are being assessed from the different theoretical perspectives.

The lack of data with regard to the possible relationships between expressive language abilities and affective understanding is surprising, given the central role accorded to language in the development of children's affective understanding; i.e., parental narratives (Harris, 2000) and parent-child emotion-focused discussion (Dunn, 1988). Emotional expressiveness is considered in its own right as a key element of emotional and social competence alongside affective understanding and affect regulation abilities (Denham, 1998). Nonetheless, the relationships between language abilities, emotional expressiveness and affective understanding appear relatively neglected.

When it comes to emotional processes in general, some have argued that IQ is not particularly relevant (Goleman, 1995). Results from a recent study involving young adult students suggest that the picture is more complex (Ciarrochi, Chan, & Caputi, 2000). Factors such as self-esteem and empathy, but not intelligence, predicted an aggregate emotional intelligence score based on emotional perception, affective understanding and emotional management (Ciarrochi et al., 2000). However, IQ was found to make an independent contribution to the ability to manage laboratory-induced moods, and it also prevented biased social judgements, whereas emotional intelligence was found to be related only to the ability to manage moods. Verbal IQ has been found to be related to understanding of complex emotions (Cook et al., 1994) in primary school-aged children with behavioural problems. At the same time, after IQ was controlled for significant differences in the ability to provide personal examples of basic emotions remained. This suggests that IQ has more of an impact when assessing sophisticated rather than basic levels of emotional understanding for any given age group. As far as behaviour problems are concerned, a number of researchers have reported an inverse relationship with IQ (Cook et al., 1994; Paget, 1982; Schonfeld, Shaffer, O'Connor, & Portnoy, 1988; White, Moffit, & Silva, 1989) and with verbal ability, in particular (Hinshaw, 1992).

In summary, the research to date suggests that intelligence is related to certain types of emotional understanding and that it contributes to management of moods, thereby preventing the latter from affecting social judgement. One of the aims of the present study is to clarify the relationships between expressive language abilities, intelligence and affective understanding in primary school-aged children.

### ***Individual Differences in Affective Understanding:***

#### ***Attachment, Gender, Parental and Sibling Factors***

A number of factors which have been identified as contributing to the development of affective understanding will be presented briefly.

#### ***Gender***

In line with cultural expectations, there is evidence that females are better able to decode emotional expressions (Casey, 1993), but the literature does not reflect consistent significant gender differences in performance on other measures of emotional understanding (Gross & Ballif, 1991; Strayer, 1989; Thompson, 1989). There is also evidence suggesting that boys and girls differ in the way they think about the causes of affective experiences, with girls focusing more on interpersonal aspects of situations (Fabes et al., 1991; Strayer, 1986).

#### ***Attachment Security***

The findings that attachment security predicted performance on a task of mixed emotional understanding were discussed in preceding chapters (H. Steele, M. Steele & Fonagy, 1996), and attachment is expected to impact in a similar way on affective understanding (as measured on the AT).

#### ***Parent-Child Talks about Emotions***

Parent-child talk about emotions, also referred to as “coaching” (Denham, 1998) and “emotional didactics” (Harris, 2000), has been identified as playing a pivotal role in the development of children’s emotional understanding. Studies from at least two major laboratories have shown that it is a predictor of concurrent and later emotional understanding whether measured at 24 months, 33 months, or 6 years of age (Denham, Cook, & Zoller, 1992; Denham, Renwick-DeBardi et al., 1994; Dunn & Brown, 1994; Dunn, Brown, & Beardsall, 1991). Results from a recent study indicate that parental emphasis on why people experience specific emotions, is especially important (Garner, Jones, Gaddy, & Rennie, 1997). Harris (2000) has argued that rich and complex parental accounts of the emotional significance of events help children to organise events into

narrative structures and at the same time teach children this skill. He suggests that the quality of parental elaborations and the emphasis on emotions are important in the development of similar abilities in children. This proposal is similar to that of Fonagy et al. (2002), and that of Fonagy and Target (2003), in parental reflective functioning is seen as central to the development of children's ability to consider mental states, affects and interpersonal reactions in the course of everyday life.

In addition, positive maternal responsiveness (i.e., parents show happiness when children are happy, calmness when they are angry, and tenderness when they are sad) has been found to predict child emotional understanding (Denham, Renwick-DeBardi et al., 1994). There is also evidence that maternal anger, sadness and tensions are inversely related to children's emotional understanding (Cummings et al., 1985; Cummings, Zahn-Waxler, & Radke-Yarrow, 1981; Denham, 1998; Dunn & Brown, 1994).

### ***Fantasy Play and Emotional Understanding***

The link between fantasy play and emotional understanding has been confirmed by a number of studies showing that individual differences in imagination were significantly related to affective perspective taking (Astington & Jenkins, 1995; Griffin, Carlson, Taylor, & Wilson, 1997; Slomkowski & Dunn, 1992; Youngblade & Dunn, 1995).

In this study, the primary concerns are the reliability and validity of the AT when used to assess children's affective understanding. The focus is on child factors, rather than on parent and family factors. Based on assessments of children's functioning and abilities across a number of domains, various dimensions of the validity of the AT will be evaluated.

### **Aims and Objectives of this Study**

The aims of the present study are to present the AT and to examine its psychometric properties, including reliability and validity.

The reliability of the AT will be established by addressing the following objectives: 1) to present the development of an AT coding manual, and to present the interrater reliability results obtained using this manual; 2) to evaluate the internal consistency reliability of the AT scales, and the dimensionality and factor structure of the AT; and 3) to establish whether the AT has adequate stability over a 3-month test-retest period, as well as after 1 year. These indexes of reliability will be evaluated to determine whether or not they meet the criteria set out by Kline (2000) for interrater reliability and internal consistency, and as well as the criteria established by Murphy and Davidshofer

(2001) for evaluating test-retest reliability. (The criteria will be detailed in the section that addresses the analyses used.)

The validity of the AT will be evaluated in the context of the relationships between performance on the AT and key demographic variables, IQ, expressive language abilities, self-esteem, psychopathology, social adaptation and attachment. These relationships and associations will be examined with the following objectives in mind: 1) to investigate children's affective understanding as measured by the AT in relation to gender and family composition; 2) to evaluate the construct validity of the AT in the context of the relationships between children's performance on the AT and age, IQ, expressive language abilities, psychopathology and social adaptation; 3) to evaluate whether factors other than age and IQ play a role in the prediction of children's affective understanding; 4) to evaluate whether or not there are significant differences in children's affective understanding as a function of attachment security and psychopathology; 5) to examine the convergent validity of measurements of children's mentalisation abilities from the perspectives of theory of mind and affective understanding, thus to examine the correlations between children's HSS scores and their performance on the AT Scales.

The hypotheses corresponding to each of these objectives will be outlined below.

### ***Hypotheses***

#### ***Gender and Family Composition***

Given the divergent findings with regard to gender and affective understanding and the fact that the AT measures a dimension of emotional understanding that is cognitively mediated, no gender effects are predicted. With regard to family composition, only children are expected to show lower affective understanding when compared to children with siblings, on some, but not all, dimensions of affective understanding, in light of previous findings in this regard (Perner et al., 1994; Jenkins & Astington, 1996). At a more exploratory level, children living in single-parent and two-parent families will be compared to determine whether or not children from single-parent families had lower affective understanding than children from two-parent families given that growing up in single-parent families has adverse impact on children's affective understanding (Luthar, 1999).

#### ***Affective Understanding and Age, IQ, Expressive language, Psychopathology and Social Adaptation***

A positive correlation between age and affective understanding is expected, and will be regarded as evidence that the measure is sensitive to developmental changes in

children's affective understanding during the primary school years. Based on previous findings of relationships between theory of mind and language abilities (Astington & Jenkins, 1995; J. G. De Villiers and P. A. De Villiers; Happé, 1995; Tager-Flusberg, 1996), affective understanding is expected to show a positive relationship of moderate strength with verbal IQ. Affective understanding is not expected to be directly related to expressive language abilities. A significant negative correlation between affective understanding and behaviour problems (as measured on the CBCL Externalising Scale) is expected, based on previous findings (Kusche et al., 1994). A negative correlation is also expected between affective understanding and social adaptation (as measured on the CAFAS; where higher scores reflect increased adaptive difficulties) on the basis of previous findings (Denham et al. 1990; Field & Walden, 1982; Gnepp, 1989). There is currently no data regarding the relationship between affective understanding and depression, anxiety and self-esteem, but an inverse relationship between affective understanding and symptoms of depression and anxiety is expected. This expectation is based on the rationale that children who are not able to understand why people react the way they do will be more vulnerable to depression or anxiety symptoms.

### ***Predictors of Children's Affective Understanding***

It is predicted that social adaptation and possibly, psychopathology, will make a contribution to predicting children's affective understanding on the AT, for reasons outlined above.

### ***Differences in Affective Understanding as a Function of Attachment and Psychopathology***

Based on the findings that attachment predicts affective understanding (H. Steele et al., 1996), affective understanding of children (as measured by the AT) is expected to discriminate between secure and insecure children, after adjustments are made for other contributors. The affective understanding of children with clinical levels of psychopathology is expected to be significantly lower than that of the non-clinical group.

### ***Convergent Validity of Measures of Mentalisation***

With regard to convergent validity, the relationship between children's mentalisation abilities, as measured from the perspective of affective understanding using the AT, and their theory of mind abilities, as measured by the HSS, is expected to be strong because theory of mind and affective understanding are considered to be overlapping constructs.

## Method

### *Participants and Recruitment*

The AT was administered to a sample of 175 children aged 5-11, 65 of whom were recruited from schools and 110 from referrals to Child and Adolescent Mental Health Services in London, UK. This study was part of a larger project of measure development conducted at the Anna Freud Centre, London, UK (see Chapter 3 for a detailed discussion of the recruitment procedure).

The sample comprised 108 boys (62%) and 67 girls (38%). With respect to age, there were no significant differences between boys ( $M_{\text{age}} = 8.9$ ,  $SD = 1.79$ ) and girls ( $M_{\text{age}} = 8.9$ ,  $SD = 1.67$ ),  $t(173) = -.13$ , ns).

The vast majority of the children lived with their biological mothers (95%). Approximately half lived in two-parent families (58%) and with both biological parents (53%). The majority of the children were Caucasian (73%) and the vast majority (97%) spoke English at home. Many were only children (44%) or had only one sibling (31%), and those with two or more siblings (25%) were in a minority. In terms of maternal educational levels, the mothers with a university degree (44%) or with college education (29%) were over represented, and mothers with only secondary school education (25%) were in the minority. The majority of mothers were employed at the time of the interview (72%), as were the majority of the fathers (98%). In terms of the ten standard employment categories used in the UK census, 53% of families had specialised technical, professional and managerial occupations, 34% were employed in occupations involving sales, personal services, skilled trades, administration or secretarial work. The remainder consisted of manual workers (4%) and those who were retired, homemakers and unemployed (9%).

In terms of attachment status, attachment data was available for 62 children only: 15 were classified as securely attached to their mothers and 47 as insecurely attached (including disorganised).

### *Instruments*

#### *Development of the Affect Task (AT)*

The AT (Fonagy et al., 2000) was developed by Peter Fonagy, Mary Target and the author of this thesis (Fonagy et al., 2000) to assess affective understanding in children aged 5-11. The author of this thesis was responsible for developing the AT coding manual that introduces the AT and which contains descriptions and illustrations of

the different levels for each of the abilities that are assessed.

One of the AT's strengths is that it can be used to assess five dimensions of affective understanding that have been identified by the empirical literature as critical. It was designed from a reflective functioning perspective and allows for the systematic differentiation between different levels of sophistication in affective understanding in interpersonal contexts. The dimensions that are assessed include: 1) Accuracy: the ability to identify which affects are likely to result given emotion evoking situations; 2) Justification: the ability to provide justifications and narratives which show understanding of the causal links between contexts and feelings; 3) Impact: the understanding of how feelings change; 4) Internal/External: the ability understand that feelings might be dissembled and that there are a variety of reasons explaining why the feelings shown on the outside might be different from those on the inside; and 5) Challenge; the ability to imagine and understand that someone else may have a reaction very different from one's own reaction, or a reaction that is not common.

The AT for primary school children was adapted from an earlier version of the AT that was developed for pre-school children by Howard Steele, Miriam Steele and Peter Fonagy (H. Steele et al., 1999). The AT for pre-school children focuses specifically on the ability to consider mixed and multiple emotions; this contrasts with the wider focus and more complex coding system of the AT developed for primary school children, as reported.

The AT uses line drawings of children portrayed in six emotionally charged everyday situations that were selected because they are familiar to school going children and because these situations commonly elicit a range of emotions. The AT has an introductory component which is not scored and which introduces the child to line drawings of faces depicting nine different emotional expressions ranging from happy to shocked; these were derived from Ekman et al. (1972). The child is asked to identify the different emotions in order to familiarise him with the different faces and with the idea that each face is meant to represent a different mental state. The same nine faces are then used in acetate form for the next part of the task. In the second and central component of the AT, the child is shown the six cartoon drawings, in which the facial expressions of the characters are not drawn in. The interviewer then reads and animates a short script that accompanies each picture. Parallel versions of the six scenarios and accompanying cartoons with boy and girl protagonists are used depending on the gender of the child being interviewed.

The drawings reflect situations familiar to school going children; in these



situations, there is a central affective theme: bullying, being selected to be captain, being left out, being naughty at the expense of another child, being punished or being in an embarrassing situation. Story 1 is about a bully who pushes over a younger child in front of his/her friends in the school playground. Story 2 describes an athletic child who is selected by his/her teacher from amongst a group of other children to be the swimming team captain. Story 3 is a continuation of the previous story: A child, who is not very good at swimming, is the last person to get picked to be on a team. Story 4 is about a bored child who flicks a piece of paper at and stings the neck of the child sitting in front of him/her during a math lesson. Story 5 follows from Story 4; the protagonist in this story is caught by the teacher and has to stay in class to do extra work during playtime. The victim of the flicking incident and another child observe him through the window. Story 6 is about a child who mistakenly wears very formal clothes to an outdoor children's party. His or her arrival is observed by a group of casually dressed children.

After each narrative, the child is invited to choose the appropriate acetate faces to show how all the children in the story might be feeling, using as many faces, or feelings, for each of the characters as he/she may want to use. Following this, the child is asked: 1) to name all the feelings (used to rate accuracy of the identification of affects); 2) why they may be feeling that way (used to rate the capacity to justify and provide a plausible, well motivated explanation or narrative which explains the different emotional reactions); 3) what happens to the feeling (used to rate the child's knowledge of the fact that the impact of emotions changes over time and his knowledge of the fact that people use specific strategies to reduce the impact of negative feelings; 4) whether the character could be feeling something different on the inside than he is showing on the outside and then to explain why (used to rate the child's understanding that feelings may be hidden for different reasons and that appearances may not reflect internal emotional experience); and 5) a "challenge" question in which the child is asked to imagine and explain why another "very different sort of child" might have a quite different response to the one they had originally attributed to the character (used to rate the child's capacity to shift perspectives and consider why someone else might have a quite different emotional reaction). This last question was added to determine the child's ability to be recursive and flexible in thinking about and consider the emotions of other children, i.e., is the child able to consider the feelings that he/she would have had in the same situation. Is the child able to shift mental frames when challenged to consider why someone might have a quite different emotional response. A complete version of the AT, including its administration procedure and coding manual, has been appended (see Appendixes C1, C2 and C3).

The coding system provides a systematic approach to scoring children's responses concerning the identification and discussion of emotional states, from a reflective functioning perspective. A hierarchical approach is used that differentiates between five levels of mentalisation on the basis of elaboration and complexity. The approach used to rate responses to the Accuracy and Justifications questions is outlined in Table 19.

At this stage, the only data available regarding the psychometric properties and performance of the AT is exploratory, based on a small sample, and on an earlier version of the coding system, as reported by Leeuwerik (1999) in a Master's thesis. Her results demonstrated that it was possible to achieve good interrater reliability using the AT coding manual.

### ***Other Measures***

Other measures used in this study include two parent-report measures, namely the Child Behaviour Checklist (CBCL: Achenbach & Edelbrock, 1983) and the Child Adaptation and Functioning Scale (CAFAS: Hodges, 1998). Six child-report measures will also be used, including two measures of depression and anxiety, the Child Depression Inventory (CDI: Kovacs, 1992) and the State and Trait Anxiety Scale for Children (STAIC: Spielberger, 1970), a measure of child self-esteem, Harter's Self-Perception Profile (Harter: Harter, 1985), and the Child Attachment Interview (CAI: Target et al., 2000). In addition, a short form of the Wechsler Intelligence Scale for Children - Third UK Edition (WISC-III<sup>UK</sup>) will be administered to obtain an estimate of IQ and the Clinical Evaluation of Language Fundamentals-Revised (CELF-R: Semel et al., 1987) will be administered to assess expressive language abilities. These measures and their psychometric properties presented in detail in Chapter 3.

Table 19

*AT: Examples of Coding System and Responses for Accuracy and Justification*

Level	Accuracy Coding System	Examples
1.	Unable to attribute any reaction.	"Don't know" "What do you think?" "Nothing".
2.	Does not include an emotional component.	"He wants to go back inside".
3.	Able to provide an emotional label, but these responses are at the level of the most obvious.	"The bully is 'happy', the victim is 'sad'".
4.	Describes differentiated affects that indicate a mixture of feelings.	"Sad and cross".
5.	Sophisticated responses describing differentiated affect states and which address apparent contradictions between affect states.	"He feels sad that he was pushed over, and he's angry with the bully for making him cry and spoiling his game".
Level	Justification Coding System	Examples
1.	Unjustified and parroting.	"Because he was pushed".
2.	Limited explanation in terms of the context.	"Because he did nothing and got hurt".
3.	Reference to affects and mental states.	"Shocked because they like him".
4.	Reference to mental states and implicit Interpersonal orientation.	"Feels sad because he thinks the bully probably has no friends, and feels sorry for him".
5.	Reference to mental states and explicit interpersonal orientation.	"The boy who wasn't picked feels sad because he thinks the others did not want him on the team".

### ***Procedure***

The procedure of the Anna Freud Centre Standardisation Study was presented in Chapter 3. All interviews were conducted in a quiet room either at school, home or at the Anna Freud Centre, and the interviews and assessments were completed over 2-3 sessions. All child interviews were videotaped and the parent interviews were audiotaped. On the average, the AT interview took approximately 45 minutes to complete. Thirty children agreed to participate in the test-retest study and repeated the AT interview after a 3-month interval. Approximately 30% of the families who participated in the study at time 1 returned after a 1-year interval to complete the same battery of tests.

### ***Raters and Coding Procedure***

Five raters were trained to use the AT coding system. Three had completed 3 years of undergraduate psychology training and two had post-graduate qualifications in psychology. Three were female and two were male.

Approximately 16 hours of training and ten interviews were required for raters to becoming familiar with the coding manual. Once raters were able to reach 80% agreement amongst them on the training interviews, they received 30 new transcripts of videotaped AT's for the interrater reliability study. This sample was selected to include an approximately even number of boys and girls of all age groups, as well as a range of types and levels of psychopathology. Once raters were familiar with the coding manual, it took them approximately 30 minutes to rate interviews.

### ***Planned Data Analyses***

To establish the interrater reliability, the intraclass correlations (ICC) using Bartko's two-way random effect model are computed to provide an estimate of agreement between raters for the scores on the individual stories, as well as the total scores (Bartko, 1976; Carpenter et al., 1976). Following the guidelines of Endicott and Spitzer (1978) for interpreting ICC's, values above .75 will be considered as indicative of good reliability; between .50 and .75, as fair; and values below .50, as reflecting poor reliability. To establish the stability of the AT over time, Pearson product-moment correlations ( $r$ ) between time 1 and time 2 scores over a 3-month test-retest interval, as well as after a 1-year period, are calculated. Following Murphy and Davidshofer's (2001) guidelines, moderate test-retest correlations of .6 and above will be considered as acceptable; test-retest correlations of .5 and above will be regarded as low; and below .5, as poor. This

more tolerant approach to assessing test-retest stability was used in view of the fact that children recruited from referrals to mental health services constituted a large part of the sample; stability in measure scores over time tend to be much lower in these types of samples (Kline, 2000). It may be that motivation and ability to focus on tasks fluctuates in children with mental health problems or who are experiencing problems or acute life stressors.

To examine the factorial structure of the AT, stories with good interrater reliability (using the revised AT coding manual) are selected and an exploratory factor analysis is performed to investigate the dimensionality of the AT. This is primarily for exploratory purposes as the scales will be used in the analyses. Next, the internal consistency of each scale is evaluated using Cronbach's alpha. Following Kline's guidelines (2000), scale alphas of .7 will be considered as indicative of good internal consistency.

The relationships between the AT and gender, family composition, IQ, expressive language abilities and self-esteem, are examined using Pearson product-moment correlations and *t*-tests. Subsequently, significant relationships are taken into account. In order to determine if psychopathology and social adaptation constitute predictive factors of children's affective understanding as measured by the AT, a stepwise multiple regression analysis is employed.

One-way analysis of covariance (ANCOVA) is then used to investigate whether children's affective understanding (as measured on the AT) differs as a function of psychopathology as reassured on the CDI and CBCL), after taking into account the effects of age and IQ. ANCOVA is also used to examine whether or not AT performance differs as a function of attachment security (as measured on the CAI), after taking into account the effects of age and IQ.

## Results

### *Performance of the Affect Task*

Means and standard deviations for the AT Scales are summarised in Table 20. The Accuracy and Justification scales included 14 items, and the Impact, Challenge and Justification scale included 6 items. An examination of the item scores confirmed that primary school-aged children have scores across the full range (from 1 to 5) on the majority of items. The items means decreased across the scales, with item means of 4 for the Accuracy questions, 3 for the Justification and Impact questions, and 2 for the Impact

and Internal/External questions. This suggests that children find the questions increasingly difficult.

Table 20

*AT: Scale Means and Standard Deviations*

Scales	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Accuracy	174	53.48	5.69	34	62
Justification	170	29.48	6.32	14	46
Impact	101	17.80	4.60	6	25
Challenge	105	13.38	3.26	6	20
Internal/External	103	10.34	4.05	6	27

***Reliability of the AT***

Three standard indexes of reliability are assessed, namely, interrater reliability, internal consistency and test-retest reliability of the AT.

***Interrater Reliability of the AT Rating System***

Table 21 shows the intraclass correlations (ICC: Bartko, 1976) for AT item scores with five raters. The results indicate that the agreement between the raters were all in the fair to good range. Consensus ratings were entered into subsequent analysis with the author serving as mediator where necessary.

Table 21

*AT: Interrater Reliability of the Scales*

Stories	Intraclass Correlations (ICC)				
	Accuracy	Justification	Impact	Challenge	External/Internal
<b>Bully story</b>					
Victim	.79	.77	.89	.78	.80
Bully	.80	.75			
Observers	.72	.77			
<b>Captain story</b>					
Hero	.75	.85	.65	.85	.77
Observers	.67	.88			
<b>Left out story</b>					
Victim	.69	.82	.71	.68	.75
Observers	.82	.80			
<b>Flicking story</b>					
Victim	.72	.75	.92	.82	.76
Bully	.73	.66			
<b>Detention story</b>					
Bully	.79	.84	.91	.66	.85
Observer	.77	.68			
<b>Party story</b>					
Victim	.78	.73	.77	.80	.77
Mother	.88	.79			
Observers	.78	.75			
Range	.67-.88	.66-.88	.65-.92	.66-.85	.75-.85

*Item-Total Correlations for the AT*

Item-total correlations and alpha coefficients were calculated for all the scales, and the internal consistency results are presented in Table 22. The alpha coefficients reflected good internal consistency for the Accuracy scale ( $\alpha = .79$ ), the Justification scale ( $\alpha = .81$ ), the Impact scale ( $\alpha = .7$ ), External/Internal scales ( $\alpha = .73$ ) and Challenge scale

( $\alpha = .69$ ).

The item-total correlations for the Justification scale were recalculated for 13 items after the Justification score for the observers in the Bully Story was excluded, as it was found to be unacceptably low (1.6). Where scale alphas were above .70, items with item-total correlations of above .20 were kept in the interest of maintaining potential sources of variance, though the majority of items had item-total correlations above .30.

Table 22

*AT: Item-Total Correlations and Alpha Coefficients of the AT*

Stories	Corrected Item-Total Correlations				
	Accuracy ( <i>n</i> = 144)	Justification ( <i>n</i> = 79)	Impact ( <i>n</i> = 71)	Challenge ( <i>n</i> = 89)	Ext/Int ( <i>n</i> = 88)
<b>Bully Story</b>					
Victim	.48	.35	.26	.49	.35
Bully	.30	.36			
Observers	.26				
<b>Captain Story</b>					
Hero	.34	.43	.42	.35	.39
Observers	.51	.55			
<b>Left out Story</b>					
Victim	.50	.49	.33	.45	.55
Observers	.49	.38			
<b>Flicking Story</b>					
Victim	.38	.51	.61	.43	.44
Bully	.26	.56			
<b>Detention Story</b>					
Bully	.52	.42	.62	.39	.56
Observer	.45	.61			
<b>Party Story</b>					
Victim	.49	.60	.37	.33	.55
Mother	.21	.36			
Observers	.41	.39			
Scale Alpha	.79	.82	.70	.69	.73



Pearson product-moment correlations were used to examine the relationships between performance on the different scales, and ( $r$ ) ranged from .35 to .49 (see Table 23), showing relationships of moderate strength between performance across the AT scales.

Table 23

*AT: Correlation Matrix Used in the Factor Analysis*

Scales	2	3	4	5
1. Accuracy	.49*** ( $n = 170$ )	.37*** ( $n = 101$ )	.36*** ( $n = 105$ )	.49*** ( $n = 103$ )
2. Justification	—	.35*** ( $n = 100$ )	.48*** ( $n = 100$ )	.45*** ( $n = 102$ )
3. Impact		—	.34*** ( $n = 98$ )	.38*** ( $n = 98$ )
4. Challenge			—	.40*** ( $n = 101$ )
5. Internal/External				—

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

### ***Dimensionality and Factor Structure of the AT***

In order to further explore the dimensionality of the AT, the factor structure of the AT was investigated using principal-component analysis with varimax rotation.

Given the results of the scree test, it was concluded that two factors should be rotated. The rotated factor solution yielded two interpretable factors: affect attribution and complex affect. The affect attribution factor accounted for 75% of the item variance, and the complex factor accounted for 12% of the item variance (see Table 24). The affect attribution factor included all the items of the Accuracy and Justification scales, and the complex affect factor included all the items of the Impact, Challenge and Internal/External scales.

Table 24

*AT: Item Loadings and Percentage of Variance Explained by Principal Components*

Affect Task Items	Affect Attribution	Complex Affective
	& Explanation	Understanding
	Factor 1	Factor 2
Left out accuracy: observers	.905	.403
Left out accuracy: victim	.905	.403
Captain accuracy: hero	.905	.403
Captain accuracy : observers	.905	.403
Bully accuracy: victim	.905	.403
Bully accuracy : observers	.905	.403
Detention accuracy : bully	.905	.403
Bully accuracy: bully	.905	.403
Detention accuracy: observers	.905	.403
Flicking accuracy : bully	.905	.403
Flicking accuracy : victim	.894	.394
Party accuracy: observers	.884	.372
Party accuracy: victim	.884	.373
Bully justification : victim	.866	.357
Flicking justification : victim	.866	.358
Captain justification : hero	.857	.408
Party accuracy: mother	.856	.294
Flicking justification : bully	.852	.303
Captain justification : observers	.851	.356

Table 24 (continued)

*AT: Item Loadings and Percentage of Variance Explained by Principal Components*


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Left out justification : victim	.843	.410
Left out justification: observers	.841	.364
Bully justification : bully	.839	.228
Detention justification: bully	.838	.306
Bully justification : observers	.836	.284
Party justification: observers	.825	.340
Party justification: victim	.822	.312
Party justification: bully/mother	.807	.183
Detention justification: observers	.793	.358
Bully internal/external	.361	.904
Flicking internal/external	.343	.900
Detention challenge: victim	.344	.889
Left out internal/external	.333	.878
Flicking challenge	.332	.872
Captain internal/external	.366	.862
Bully impact	.344	.858
Bully challenge	.366	.857
Captain challenge	.342	.845
Party internal/external: victim	.344	.843
Left out challenge	.350	.837
Detention impact:	.320	.836
Left out impact	.344	.828

---

Table 24 (continued)

*AT: Item Loadings and Percentage of Variance Explained by Principal Components*

Captain impact	.311	.825
Party challenge	.322	.819
Detention internal/external	.329	.812
Party impact: victim	.332	.810
Flicking impact	.334	.797
% Variance Explained	75%	12%

Based on these results there are two potential ways to use the AT data: either using the AT Scales or using the two factors of Affect Attribution/Explanation and Complex Affective Understanding. For the purposes of this study, subsequent analyses will be conducted using the AT Scales rather than the two factors, as this approach will allow for a more detailed evaluation and comparison of the performance of specific AT scales.

***Test-Retest Reliability***

Pearson product-moment correlations ( $r$ ) were used to investigate the test-retest reliability of the AT after a 3-month test-retest interval, and also to investigate stability over a 1-year period. The 3-month test-retest correlations (see Table 25) of the AT Accuracy and AT Justification scales were significant, and they showed moderate and low stability of .61 and .50. The test-retest results of the remaining three AT scales (Impact, Challenge and Internal/External) ranged from .04 to .21, indicating that performance on these scales was not stable over a 3-month period.

With regard to stability over a 1-year period, the results reflected significant correlations of .52 and .44 for the AT Accuracy and AT Justification scales, there was slightly lower stability over the 3-month test-retest period. The correlations between scores over a 1-year period on the AT Impact and AT Challenge scales were also significant, but the correlations were well below the criteria for stability.

Based on these reliability results, it was decided to conduct further analyses using only Accuracy and Justification.

Table 25

*AT: Three-Month and One-Year Temporal Stability*

Interval	<i>n</i>	Time 1		Time 2		
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>r</i>
Three Months						
Accuracy	30	53.24	5.85	53.67	6.02	.50*
Justification	30	33.17	5.44	33.06	6.02	.61**
Impact	30	19.36	4.12	21.13	2.67	.04
Challenge	30	14.37	2.74	14.91	2.72	.19
Internal/External	30	1.78	3.64	12.01	4.54	.21
One Year						
Accuracy	71	51.42	5.50	52.15	5.77	.52***
Justification	35	32.17	5.68	32.62	5.98	.44**
Impact	35	18.92	4.12	19.32	4.47	.37*
Challenge	35	14.22	2.68	14.28	2.81	.36*
Internal/External	35	1.99	3.85	11.65	4.14	.15

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ .*Validity of the Affect Task*

Construct, predictive, and discriminant validity are assessed in relation to a number of different hypotheses; this will be presented in the sections which follow.

*Relationship between Performance on the AT and Demographics, Gender and Family Composition*

Student *t*-tests were used to investigate the effects on AT performance of gender, living in two-parent families rather than in single-parent families, employment status of the parents, maternal education and the presence of siblings.

With regard to gender, there were no significant differences in the affective understanding of boys and girls on the AT scales (see Table 26).

Table 26

*AT: Gender Comparisons*

<i>Scales</i>	Girls			Boys			<i>t</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
Accuracy	66	5.14	5.14	108	5.69	6.02	.63
Justification	65	30.49	6.31	105	28.86	6.27	-1.65

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ .

Next, the impact of family composition on children's affective understanding as measured on the AT was investigated. The impact of living in single-parent families or two-parent families was examined, as well as the impact of having siblings compared to being an only child. The results revealed no significant differences in AT performance between children living in single-parent or two-parent families (see Table 27).

Table 27

*AT: Comparing Children in Two-Parent and Single-Parent Families*

Scales	Two-Parent			Single- Parent			
	Families			Families			
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Accuracy	104	51.07	5.54	59	49.81	5.69	1.38
Justification	102	29.03	6.71	57	30.46	5.86	-1.34

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Results from group comparisons between only children and children with siblings showed that children with siblings performed significantly higher on the Justification scale of the AT. However, no differences were found on the Accuracy scale (see Table 28).

Table 28

*AT: Comparing Only Children and Children with Siblings*

Scales	Only Child			Child with Siblings			<i>t</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
Accuracy	76	51.22	5.45	98	49.91	5.84	1.52
Justification	74	28.51	6.41	96	30.74	6.01	2.31*

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Next, *t*-tests were used to examine whether or not children of working caregivers differed from children with caregivers who stayed at home in terms of their affective understanding as measured by the AT scales. The results revealed no differences between the two groups (see Table 29)

Table 29

*AT: Comparing Children of Working Caregivers and At-Home Caregivers*

Scales	Working Caregivers			At Home Caregivers			<i>t</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
Accuracy	113	5.90	5.75	43	5.23	5.17	.67
Justification	110	29.70	6.01	42	30.14	7.12	-.39

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

### ***Relationship between Performance on the AT and Age, IQ and Expressive Language Abilities***

In order to explore the validity of the AT, correlations between the two AT scales and age, IQ and expressive language were examined. As can be seen from Table 30,

there were significant age effects on both AT scales. The results show significant correlations between intelligence and children's performance on the AT Accuracy and Justification scales. The correlations between performance on the AT scales and expressive language abilities as measured by the CELF-R (see Table 30) were not significant, and the strength of the relationships was weak.

Table 30

*AT: Correlations with Age, IQ and Expressive Language*

Variable	Accuracy	Justification
Age	.45*** ( <i>n</i> = 174)	.53*** ( <i>n</i> = 170)
WISC Full IQ	.35*** ( <i>n</i> = 150)	.26** ( <i>n</i> = 147)
WISC Verbal IQ	.40*** ( <i>n</i> = 149)	.29*** ( <i>n</i> = 147)
WISC Performance IQ	.27** ( <i>n</i> = 130)	.20* ( <i>n</i> = 146)
CELF-R Exp. Language	.19 ( <i>n</i> = 45)	.12 ( <i>n</i> = 45)

\**p* < .05   \*\**p* < .01   \*\*\**p* < .001

***Contributions of Age, Verbal IQ, Psychopathology, Social Adaptation and Self-Esteem to the Prediction of AT Performance***

Regression analysis was conducted to determine if performance on the AT was predicted primarily by age and IQ, and to determine the contribution, if any, of psychopathology and social adaptation. The first step was to examine the potential predictors by looking at their correlations with AT Scale performance (see Table 31).



Table 31

*AT: Pearson Correlations with Potential Predictors*

Predictor	Accuracy ( <i>n</i> )	Justification ( <i>n</i> )
Age	.45*** ( <i>n</i> = 174)	.53*** ( <i>n</i> = 170)
Verbal IQ	.40*** ( <i>n</i> = 149)	.29*** ( <i>n</i> = 147)
CBCL Global	-.26** ( <i>n</i> = 152)	-.05 ( <i>n</i> = 148)
CBCL Internal	-.14 ( <i>n</i> = 152)	-.09 ( <i>n</i> = 148)
CBCL External	-.27** ( <i>n</i> = 152)	-.12 ( <i>n</i> = 148)
CAFAS	-.32*** ( <i>n</i> = 162)	-.15 ( <i>n</i> = 158)
CDI	-.35** ( <i>n</i> = 73)	-.23 ( <i>n</i> = 72)
STAIC State	-.23 ( <i>n</i> = 63)	-.29* ( <i>n</i> = 63)
STAIC Trait	-.15 ( <i>n</i> = 62)	-.08 ( <i>n</i> = 62)
Harter	.19* ( <i>n</i> = 118)	.15 ( <i>n</i> = 115)

\**p* < .05 \*\**p* < .01 \*\*\**p* < .001

Age, Verbal IQ, psychopathology (CBCL, CDI and STAIC), social adaptation (CAFAS) and self-esteem (Harter) were selected as the independent variables, and the four AT scales, as the dependent variables. Two sets of regression analyses were conducted, because the number of cases with complete child-report data (on the CDI, STAIC and Harter) was considerably smaller than the number of cases with complete parent-report data (on the CBCL and CAFAS). The first set used age, verbal IQ, parent-reports of psychopathology (CBCL) and social adaptation (CAFAS) as independent variables. The second set used verbal IQ, child-reports of psychopathology (CDI and STAIC) and self-esteem (Harter) as independent variables.

***First Regression Analysis with Age, Verbal IQ and Parent-report Measures of Psychopathology and Social Adaptation***

Stepwise multiple regression was employed to determine if the addition of scores on parent-report measures of psychopathology and adaptation would improve the prediction of performance on the AT scales, after considering the contributions of age and IQ. The predictors were entered in three blocks. Age was entered in block one, Verbal IQ in block two, and CBCL (internalising, externalising and total scores) and CAFAS (total scores) in block three. The regression analysis was repeated for both AT scales.

Table 32 displays the unstandardised regression coefficients ( $B$ ), the standard error and the standardised regression coefficients ( $\beta$ ), intercept  $R^2$  and  $\Delta R^2$ , after entry of all the independent variables.

**Accuracy.** The regression using performance on the Accuracy scale as the dependent variable was conducted first. After step 1, with age entered into the equation,  $R^2 = .20$ ,  $F(1, 134) = 33.95$ ,  $p < .001$ . This indicates that age accounts for 20% of explained variance on the Accuracy scale. After step 2, with verbal IQ entered,  $R^2 = .32$ ,  $F(1, 133) = 31.20$ ,  $p < .001$ . Addition of verbal IQ to the equation resulted in a significant increment in  $R^2$ , indicating that verbal IQ accounted for an additional 12% of variance on the Accuracy scale. At step 3, with parent-reports of social adaptation as measured by the CAFAS entered,  $R^2 = .38$ ,  $F(1, 132) = 26.82$ ,  $p < .001$ , indicating that social adaptation explained an additional 6% of the variance in performance on the AT Accuracy scale. The model consisting of age, verbal IQ and social adaptation explained 38% of the variance. The partial correlations of the excluded variables and performance on the Accuracy scale were all non-significant: CBCL Internalising score (-.08), CBCL Externalising score (-.12), CBCL (Total) score (-.14).

Table 32

*AT: Stepwise Regression Analysis with Age, Verbal IQ and Parent-Report Measures*

Predictor	<i>B</i>	<i>SE</i>	$\beta$	$R^2 / \Delta R^2$
<b>Accuracy</b>				
Step 1				.20***
Age	1.47	.25	.45	
Step 2				.12***
Age	1.34	.24	.41	
Verbal IQ	.09	.02	.35	
Step 3				.06**
Age	1.32	.23	.40	
Verbal IQ	.08	.02	.30	
CAFAS	-.07	.02	-.23	
Full Model				.38***
<b>Justification</b>				
Step 1				.28***
Age	1.92	.27	.53	
Step 2				.05**
Age	1.82	.26	.50	
Verbal IQ	.07	.02	.50	
Full Model				.33***

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ 

**Justification.** The second regression analysis using performance on the Justification scale indicated that age and IQ were the only predictors, together accounting for 33% of explained variance on this scale. After step 1, with age entered in the equation,  $R^2 = .28$ ,  $F(1, 134) = 51.79$ ,  $p < .001$ , indicating that age accounted for 28% of explained variance on the Justification scale. When verbal IQ was added to the prediction equation at step 2,  $R^2 = .33$ ,  $F(1, 134) = 51.79$ ,  $p < .001$ , indicating that verbal IQ accounted for an additional 5% of explained variance. No other variables entered the model at step 3, and the partial correlations of the excluded variables and performance on the accuracy scale were all non-significant: CBCL Internalising score (-.04), CBCL Externalising score (-.10), CBCL Total score (-.06) and CAFAS (-.10).

***Second Regression Analysis with Age, Verbal IQ and Child-Report measures of Psychopathology and Self-Esteem***

Next, a set of regression analyses were undertaken which examined the contributions of performance on Child-Report measures of psychopathology (CDI, STAIC) and self-esteem (Harter) to performance on the AT scales, after considering the contributions of age and verbal IQ. Exactly the same procedure was used as for the first set of analyses, with age entered at step 1, and verbal IQ added at step 2, but this time the Child-Report measures (CDI, STAIC and Harter) were added at step 3.

Table 33 displays data for the Accuracy and Justification scales: the unstandardised regression coefficients ( $B$ ), the standard error and the standardised regression coefficients ( $\beta$ ), and intercept  $R^2$  and  $\Delta R^2$  after entry of all the independent variables.

Table 33

*AT: Stepwise Regression Analysis for Age, Verbal IQ and Child-Report Measures*

Predictor	$B$	$SE$	$\beta$	$R^2 / \Delta R^2$
<b>Accuracy</b>				
Step 1				.20**
Age	1.47	.42	.45	
Step 2				.12**
Age	1.34	.40	.41	
Verbal IQ	.09	.32	.35	
Step 3				.08*
Age	1.29	.38	.39	
Verbal IQ	.88	.03	.31	
CDI	.08	.05	-.29	
Full Model				.40***
<b>Justification</b>				
Step 1				.28***
Age	1.9	.44	.53	
Full Model				.28***

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

**Accuracy.** The regression analysis conducted with performance on the Accuracy Scale as the dependent variable will be presented first. After step 1 with age in the

equation,  $R^2 = .20$ ,  $F(1, 48) = 12.16$ ,  $p < .01$ . This indicates that age accounted for 20% of explained variance. After step 2, with both verbal IQ and age in predicting performance on the AT Accuracy Scale,  $R^2 = .32$ ,  $F(1, 47) = 11.03$ ,  $p < .01$ . This indicates that the addition of verbal IQ to the equation resulted in a significant increment in  $R^2$ , with age thus explaining an additional 12% of variance in performance on the Accuracy scale. At step 3, the CDI score entered,  $R^2 = .40$ ,  $F(1, 46) = 1.26$ ,  $p < .001$ , accounting for an additional 8% of explained variance in performance on the Accuracy scale. After step 3, the model consisting of age, verbal IQ, and CDI taken together explained 40% of the variance. No other variables entered the model, and the partial correlations of the excluded variables and performance on the Accuracy scale were all non-significant; STAIC State score (-.03), Harter (.02). The interpretation of these results must take into account the fact that they were obtained using a small sample.

**Justification.** The regression analysis with performance on the Justification scale indicated that age was the only predictor, accounting for 28% of explained variance on this scale. After step 1, with age in the equation,  $R^2 = .28$ ,  $F(1, 48) = 18.55$ ,  $p < .001$ . No other variables entered the model at steps 2 and 3, and the partial correlations of the excluded variables and performance on the Accuracy scale were all non-significant: Verbal IQ (.27), STAIC (State) score (-.25), CDI (-.23), Harter (.12).

#### ***Clinical Levels of Psychopathology and Performance on the AT***

One-way analysis of covariance (ANCOVA) was used to determine whether or not children with CBCL and CDI scores in the clinical range differed significantly from others with respect to their affective understanding as measured on the AT scales, after taking into account the effects of age and IQ. Group comparisons were based on: 1) CBCL Total scores, 2) CBCL Internalising scale 3) CBCL Externalising scale, and 4) CDI standardised scores. For the respective analyses, the independent variables were clinical status on the CBCL (where clinical was defined as T scores of 70 and above) and clinical status on the CDI (where clinical was defined as T scores of 70 and above and non-clinical as T scores of below 55). For each of the four independent variables, a set of analyses was conducted with performance on the AT Scales (Accuracy and Justification) as the dependent variables. The covariates were age and verbal IQ.

The assumptions of normality of sampling distributions, linearity, homogeneity of variance, homogeneity of regression and reliability of covariates were evaluated and shown to be satisfactory. Cells were weighted by sample size to adjust for unequal sample sizes.

**ANCOVA Using CBCL Scores.** An initial comparison of observed means indicated that children with behaviour problems in the clinical range on the CBCL Externalising scale, generally had lower affective understanding on the AT Accuracy and Justification scales (see Table 34), but after adjustment for age and verbal IQ, these differences were no longer significant. The results revealed no further group differences in the affective understanding of children as a function of psychopathology on the CBCL Internalising scale or using the CBCL Total scores. The strength of the relationships between psychopathology and the adjusted scores on the AT scales (Accuracy, Justification) were very weak, with  $\eta^2$  varying from .003 to .015 (see Tables 35, 36, 37).

Table 34

*AT: Performance of Children with Clinical and Non-Clinical CBCL Scores*

Scale	Non-Clinical					Clinical				
	<i>N</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
	<i>M</i>			<i>M</i>		<i>M</i>			<i>M</i>	
CBCL Internalising										
Acc.	105	50.84	5.61	50.77	.47	44	50.09	5.66	50.25	.72
Just.	103	29.83	6.02	29.82	.52	44	29.02	7.01	29.03	.80
CBCL Externalising										
Acc.	117	51.00	5.69	50.47	.44	32	49.22	5.19	49.75	.86
Just.	115	30.03	6.42	29.85	.49	32	28.00	5.75	28.64	.95
CBCL Total										
Acc.	111	51.01	5.76	50.84	.45	38	49.47	5.05	49.97	.78
Just.	109	30.08	6.28	29.97	.50	38	28.16	6.30	28.48	.86

Note: Acc. = Accuracy; Just. = Justification

Table 35

*AT: ANCOVA Comparing Children with Clinical and Non-Clinical CBCL Internalising Scores*

Source of variance	<i>Adjusted</i> <i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i> <i>R</i> <sup>2</sup>
Accuracy							.28
CBCL Internalising	8.46	1	8.46	.37	<i>ns</i>	.003	
Covariates							
Age	64.55	1	64.55	28.18	***	.16	
Verbal IQ	516.58	1	516.58	22.73	***	.14	
Error	3296.14	145	22.73				
Justification							.31
CBCL Internalising	19.04	1	19.04	.70	<i>ns</i>	.005	
Covariates							
Age	1418.41	1	1418.41	51.76	***	.266	
Verbal IQ	266.00	1	266.00	9.71	**	.064	
Error	3919.00	143	27.41				

\**p* < .05    \*\**p* < .01    \*\*\**p* < .001

Table 36

*AT: ANCOVA Comparing Children with Clinical and Non-Clinical CBCL Externalising Scores*

Source of variance	<i>Adjusted</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i>
	<i>SS</i>						<i>R</i> <sup>2</sup>
Accuracy							.28
CBCL Externalising	12.50	1	12.50	.55	<i>ns</i>	.004	
Covariates							
Age	637.17	1	637.17	28.06	***	.162	
Verbal IQ	478.60	1	478.60	21.08	***	.127	
Error	3292.10	145	22.70				
Justification							.32
CBCL Externalising	34.35	1	34.35	1.26	<i>ns</i>	.009	
Covariates							
Age	141.51	1	141.51	51.67	***	.265	
Verbal IQ	231.23	1	231.23	8.47	**	.056	
Error	3903.69	143	27.30				

\* $p < .05$     \*\* $p < .01$     \*\*\* $p < .001$



Table 38

AT: Performance of Children with Clinical and Non-Clinical CDI Scores

Scales	CDI					CDI				
	Other					Depressed				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
Acc.	47	52.72	4.81	51.69	.68	86	50.10	5.76	50.67	.49
Just.	47	32.36	5.62	31.07	.76	84	28.13	6.22	28.85	.56

Note: Acc. = Accuracy; Just. = Justification

Table 39

AT: ANCOVA Comparing Children with Clinical and Non-Clinical Score CDI Scores

Source of variance	<i>Adjusted</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i>
	<i>SS</i>						<i>R^2</i>
Accuracy							.35
CDI	28.27	1	28.27	1.41	<i>ns</i>	.011	
Covariates							
Age	64.10	1	64.10	31.92	***	.198	
Verbal IQ	441.69	1	441.69	22.02	***	.146	
Error	2587.08	129	2.06				
Justification							.37
CDI	132.56	1	132.56	5.24	*	.040	
Covariates							
Age	1069.32	1	1069.32	42.24	***	.250	
Verbal IQ	197.41	1	197.41	7.80	**	.058	
Error	3215.46	127	25.32				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 37

*AT: ANCOVA Comparing AT Performance of Children with Clinical and Non-Clinical Levels of Psychopathology Based on CBCL Total Scores*

Source of variance	Adjusted SS	df	MS	F	p	$\eta^2$	Adjusted $R^2$
Accuracy							.28
CBCL Total	2.80	1	2.80	.92	ns	.006	
Covariates							
Age	642.51	1	642.51	28.37	***	.164	
Verbal	486.28	1	486.28	21.47	***	.129	
Error	3283.80	145	22.65				
Justification							.32
CBCL Total	59.99	1	59.99	2.21	ns	.015	
Covariates							
Age	1424.17	1	1424.17	52.52	***	.269	
Verbal IQ	232.71	1	232.71	8.58	**	.057	
Error	3878.05	143	27.12				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

**ANCOVA Using CDI Scores.** An initial comparison of unadjusted means (see Table 38) indicated that depressed children had lower affective understanding on all the AT scales. After adjustment for the covariates, differences in affective understanding of depressed children (as assessed on the AT Justification scale) remained significantly lower than that of their non-depressed peers. Differences on the AT Accuracy scale were no longer significant after adjustment for age and IQ. The strength of the relationship between depression and the adjusted AT Justification score was weak, with  $\eta^2 = .04$  (see Tables 39). This indicates that depression explained 4% of the variance on the Justification scale.

### *Child Attachment Security, and Performance on the AT*

Analysis of covariance (ANCOVA) was used to determine whether children's affective understanding (as measured by the AT Scales) differed as a function of attachment security, after adjustment for the contributions of age and IQ. The data set used for this analysis comprised a smaller sub-sample of 62 children (15 secure and 47 insecure) for whom CAI attachment classifications were available. CAI attachment classification (secure, insecure) was the independent variable, and a set of analyses was conducted with performance on the AT Scales (Accuracy, Justification) as the dependent variables. The covariates were age and verbal IQ. The assumptions of normality of sampling distributions, linearity, homogeneity of variance, homogeneity of regression and reliability of covariates were examined and found to be satisfactory. Cells were weighted to adjust for unequal sample sizes. The descriptive statistics are summarised in Table 40. Initial comparisons based on unadjusted means indicated that securely attached children performed significantly better on the Justification scale than insecurely attached children  $t(61) = 2.19, p < .05$ . These findings remained significant after considering the effects of age and IQ,  $F(1, 59) = 4.51, p < .05$ . The results are summarised in Table 41; they show that the relationship between attachment and the adjusted AT Justification score was low but significant, with  $\eta^2 = .074$ , indicating that attachment classification explained approximately 7% of the variance of this scale. No other significant differences in affective understanding as a function of children's attachment security were present.

Table 40

*AT: Performance of Children with Secure and Insecure Attachment Classifications*

Scale	Secure					Insecure				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
Acc.	15	50.93	4.01	48.96	.42	47	49.15	6.18	48.94	.74
Just.	15	33.67	6.28	31.13	.51	47	29.53	6.71	29.97	.81

Note: Acc. = Accuracy, Just. = Justification.

Table 41

*AT: ANCOVA Comparing Children with Secure and Insecure Attachment Classifications*

Source of variance	Adjusted SS	df	MS	F	p	$\eta^2$	Adjusted $R^2$
Accuracy							.20
Secure/Insecure	20.48	1	20.48	.77	ns	.013	
Covariates							
Age	344.63	1	344.63	12.89	***	.187	
Verbal IQ	77.03	1	77.03	2.88	ns	.049	
Error	1497.71	56	26.75				
Justification							.28
Secure/Insecure	145.78	1	145.78	4.51	*	.074	
Covariates							
Age	478.79	1	478.79	14.80	***	.209	
Verbal IQ	149.95	1	149.95	4.64	*	.076	
Error	1811.22	56	32.34				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ ***Theory of Mind and Affective Understanding***

The concurrent relationships between children's theory of mind abilities (as measured by the HSS) and affective understanding (as measured by the AT scales) were investigated using Pearson product-moment correlations. As shown in Table 42, the correlations between children's theory of mind abilities and their affective understanding were significant, and ranged from .41-.54. This reflects generally moderate correlations between mentalisation abilities as assessed on the HSS and AT.

Table 42

*AT: Correlations with Theory of Mind Abilities on the HSS*

	Accuracy	Justification
	( <i>n</i> )	( <i>n</i> )
Happé's Strange Stories	.47***	.54***
	(102)	(101)

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ 

### Discussion

The aim of this study was to investigate the psychometric properties of the AT, including reliability and validity. Three indexes of reliability were evaluated, including interrater reliability, the scale qualities and test-retest reliability. Next, the validity of the AT was evaluated in the context the relationships between AT performance and age, IQ, expressive language abilities, self-esteem, psychopathology, adaptation and attachment.

In the following section, the main findings are briefly summarised and then discussed in turn.

#### *Reliability of the AT*

The findings confirm that the coding scale and system are appropriate for measuring affective understanding of children aged 5-11; item scores were distributed across the full range of the 5-point rating scale, as delineated in the AT manual.

The interrater reliability of all the scales was found to be in the fair to good range when evaluated using Kline's (2000) criteria. This confirms that the AT coding manual can be used to train graduate level coders to rate the affective understanding of primary school-aged children at an acceptable level of reliability, after a reasonable training period.

Scale analysis confirmed that the AT scales have good internal consistency. Further exploration of the dimensionality of the Affect Task revealed that the measure was composed of essentially two factors; affect attribution and complex affect. The affect attribution factor included all the items of the Accuracy and Justification scales, and the complex affect factor included all the items of the Impact, Challenge and Internal/External scales.

These results indicate that analyses can be conducted using either AT factor scores

or AT scale scores. In this study, the decision was made to use the AT scales rather than AT factors in subsequent analyses, given that there was no prior data available on the performance of these scales in relation to other aspects of children's functioning. Analyses undertaken using the individual scales also make it possible to examine whether or not specific dimensions of affective understanding are related to show particular relationships with factors such as intelligence, age and psychopathology.

Moderate stability over 3-month 1-year intervals was demonstrated for the Accuracy and Justification scales. The results concerning stability of children's complex affective understanding (as measured by the Impact and Challenge scales), were more complex. Significant correlations, reflecting marginal stability, were found between scale scores over a 1-year period, but not over a shorter 3-month test-retest period. One explanation of this pattern showing greater stability over a 1-year period is that children might not be willing or might be unable to entirely engage in a test of this nature, unless it is fresh, in the same way that it is difficult to laugh at a joke if it is retold too soon. One AT scale, the Internal/External scale, used to assess children's capacity to understand emotional dissemblance, was not included in further analyses, because the results did not show acceptable stability over time when using this scale.

### *Suggestions for Future Scale Improvement*

One possible explanation for the low stability of children's understanding of complex affect, as assessed by the AT Challenge, Impact and Internal/External scales, is that these abilities are newly emerging; they are thus more likely to be sensitive to state and context and to show unevenness across assessments. A child's performance may thus vary depending on whether or not he had a bad day at school, is worried about an exam or is tired. It may thus not be possible to obtain reliable assessments of complex and emerging mentalisation abilities of children, given that their ability to regulate affective and internal states, which in turn impacts on mentalisation, is still relatively immature and fluctuates more than does that of adults.

An alternative explanation is that the way in which complex affective understanding is assessed by the AT contributes to variation in children's performance over time. More specifically, it is possible that assessing complex affective understanding in the context of children's responses to the Accuracy questions contributes to variability in children's performance on this task over time. Questions regarding how affects change over time, questions regarding the character's internal feelings versus appearances, and the challenge question were asked in relation to different emotions, depending on the emotions children identified in response to the accuracy questions. The stability of the

Impact scale could possibly be improved by introducing an additional scenario focusing on a particular emotion, given that previous research that the ability to consider the resolution of negative emotions develops later (Steiner & Levine, 1990). This also applies to the Challenge scale. Previous research has indicates that children find some affects more difficult to consider than others. Similar factors are considered to have contributed to the lack of stability for the Internal/External scale which assessed children's ability to understand emotional dissemblance. The use of a particular scenario which tests the understanding of emotional dissemblance and social display rules could also be expected to contribute to a significant improvement in assessment reliability.

### *Association with Gender and Family Composition*

As predicted, the findings reflect no gender differences in affective understanding as measured by the AT scales; this suggests that cognitive-emotional abilities do not display the pattern of female advantage that was observed in studies of "mindreading" abilities (Baron-Cohen, 2000).

With respect to family composition, the findings indicate that children with siblings have an advantage in terms of their ability to provide narrative explanations of why certain feelings are experienced in specific contexts; this ability was measured by the AT Justification scale. The findings suggest that the presence of siblings is associated with an advantage that is specific rather than general, as no differences were evident with regard to complex affective understanding and knowing which affects will be evoked by specific contexts. This pattern of mixed findings fits well with the divergent results reported in the literature with respect to the influence of siblings on the development of affective understanding (Youngblade & Dunn, 1995). Children with siblings, when compared with only children, thus showed a better understanding of the emotional reactions of others; this finding is interesting and consistent with the conclusions of Perner et al. (1994) and Jenkins & Astington (1996). They contend that having siblings provide additional opportunities to engage in role play, which facilitates the development of children's understanding of the emotional reactions of others. At the same time, thanks to their siblings, these children benefit from additional opportunities to learn about the emotional reactions of others, and to learn from parental discussions of emotions.

No additional associations between affective understanding and family composition, or between affective understanding and the mother's employment status were detected.

*Association with Age, IQ and Expressive Language Abilities*

Children's scores on all AT scales showed significant correlations with age and indicate that affective understanding increases significantly during the primary school years between the ages of 5 and 11. The findings of the regression analysis (based on the larger sample) indicate that, in addition to age, intelligence also made a significant contribution to the prediction of performance on the AT (Accuracy and Justification scales). Verbal intelligence explained an additional 12% of the variance on the Accuracy Scale, and 5% of the variance on the Justification Scale. Given these findings it can be concluded that verbal intelligence is a stronger predictor of children's ability to understand which emotions are likely to be evoked in particular interpersonal contexts, than it is of children's ability to provide explanations of emotions or to use their understanding reflexively when challenged to do so.

The finding that intelligence contributes to the prediction of affective understanding is in line with earlier findings that intelligence added to the prediction of complex affective understanding (Cook et al., 1994) and social judgement when under emotional pressure (Ciarrochi et al., 2000). In the current study verbal intelligence was a stronger predictor of children's ability to understand what others are likely to feel, than of complex affective understanding.

The lack of significant results with regard to expressive language abilities was initially surprising, given the findings reported in Chapter 4 showing moderate correlations between language skills and theory of mind performance as measured by the HSS. The small sample size used for this analysis may have partly contributed to the lack of significant relationships, but even so, the strength of the relationships was weaker than expected. Given the small sample size, and the fact that only results based on correlation analysis are available, these results need to be considered as somewhat tentative. They suggest that the relationship between children's affective understanding and verbal intelligence is stronger than that between affective understanding and expressive language abilities. When these findings are considered in the context of previous findings linking language abilities and theory of mind (Astington & Jenkins, 1995; J.G. De Villiers and P.A. De Villiers; Happé, 1995; Tager-Flusberg, 1996), it is reasonable to speculate that the cognitive aspects of language abilities, rather than expressive language abilities per se, are linked with theory of mind and affective understanding. Expressive language abilities may be more closely related to other aspects of children's interpersonal functioning and to their ability to express their emotions, considered a distinct emotional skill by Denham (1998) and Saarni (1999).



The moderate strength of the relationships with intelligence suggests that the abilities measured by the AT are sufficiently distinct from intelligence. On the basis of these findings it can be concluded that affective understanding as measured by the AT is a valid construct and involves a distinct ability. The moderate strength of the relationship between affective understanding and intelligence is consistent with expectations, given that the AT assesses cognitive-emotional abilities.

### ***Psychopathology as Predictor of Affective Understanding as Measured by the AT***

Regression analyses were used to determine whether or not psychopathology, social adaptation and self-esteem would improve the prediction of affective understanding on any of the AT scales, over and above age and IQ. The findings indicate that parent-reports of social adaptation and child-reports of depressive symptomatology add significantly to the prediction of performance on the AT Accuracy scale.

The finding that children's depressive symptoms accounted for an additional 8% of the variance in children's ability to think about the affective reactions of others (as measured by the AT Accuracy scale) is new and interesting. This finding is in line with theoretical expectations based on theory of mind and reflective functioning models (Fonagy & Target, 2003), which suggest that the ability to interpret the reactions of others will be associated with better self- and affect regulation and social adaptation. Another possible explanation is that children who have difficulty understanding others' feelings are at an interpersonal disadvantage; they are less likely to be successful in achieving goals in a social context and this adds to the risk of depression. The possibility that depression lowered children's concentration and motivation on this task, was rejected, given that a similar pattern of results were not found for the other scales.

Children's social adaptation as assessed by the CAFAS accounted for an additional 6% of the variance in performance on the AT Accuracy Scale. This finding that social adaptation made a small addition to the prediction children's affective understanding is in line with previous findings showing a positive relationship between emotional understanding and social competence, as well as prosocial reactions to the emotions of others (Denham, 1986; Denham & Couchoud, 1990; Denham, McKinley, Couchoud, & Holt, 1990; Field & Walden, 1982; Gnepp, 1989). One possible explanation which has been suggested by Denham (1998) and Saarni (1999) is that affective understanding is one of a range of emotional abilities which contributes to better social and interpersonal functioning, and which increases the chances of achieving goals in social contexts. Another, not incompatible, explanation from an attachment and reflective

functioning perspective (Fonagy & Target, 2003) is that children who have had developmental experiences which facilitate affective understanding, are also likely to have better self-regulation, feel more positive and be more interpersonally oriented..

***Clinical Levels of Psychopathology and Affective Understanding  
as Measured by the AT***

The findings show that children who reported significant levels of depression had lower affective understanding scores than their peers on the AT scales and that these differences (on the AT Justification scale and AT Challenge scale) remained significant after adjusting for age and IQ. Depression explained 4% of the variance on the AT Justification scale. This indicates that depressed children had greater difficulty in understanding affective reactions in interpersonal terms, as assessed by the AT Justification scale. The strength of the relationships between depression, social adaptation and the adjusted Justification scores was weak.

This finding that depressive symptoms predicted performance on the AT Justification scale provides some support for the thesis put forward by Fonagy and Target (2003), namely, that the ability to mentalise and to understand people's emotional states in interpersonal terms is linked to self-regulation as well as affect regulation.

Children with behavioural difficulties in the clinical range on the CBCL Externalising Scale had lower affective understanding on the AT Accuracy and Justification scales when compared with other children, but these differences were no longer significant once the means were adjusted to account for age and IQ. The finding that behaviour difficulties were associated with lower affective understanding as measured by the Accuracy and Justification scales is consistent with the findings of a study using the Kusche Affective Interview (Kusche et al., 1994) to assess children with conduct disorder. It is in line with Miller and Eisenberg's (1988) conclusion that research evidence points to an inverse relationship between antisocial behaviour and emotional understanding.

In retrospect, it was probably overly conservative to control for the impact of intelligence in these analyses. It is possible that children with lower intelligence are, in part, more likely to develop psychopathology because they have poorer affective understanding abilities. If prior analyses only adjusted for age and if a significant association between psychopathology and affective understanding was found, this may have led to the conclusion that interventions should be focused on increasing affective understanding should be considered, without considering the role of intelligence. The

findings of the present study draw attention to the contribution of intelligence, and could thus help to inform the choice and development of intervention strategies which may be more appropriate for use with children who do not have particularly strong language skills. For example, it is possible that children who have lower cognitive linguistic abilities are better visual learners; thus, visually based learning strategies, and visually presented scenarios may be more effective than language-based learning and interventions. Considering the widely reported findings that behaviour problems show a negative association with IQ (Cook et al., 1994; Paget, 1982, Schonfeld, Shaffer, O'Connor, & Portnoy, 1988; White, Moffit and Silva, 1989), the choice of effective intervention strategy for this group of children is particularly crucial. These results are thus pertinent to discussion about the types of interventions most likely to facilitate change.

### ***Child Attachment Security and Affective Understanding as Measured by the AT***

As predicted, the findings show that children classified as securely attached had better affective understanding scores than their peers on all the AT scales. The differences between securely and insecurely attached children on the AT Justification scale remained significant after adjusting for age and IQ. Attachment classification explained 7% of the variance on the AT Justification scale, and the strength of the relationship between attachment and the adjusted AT Justification scores was weak.

These findings suggest that the ability to consider the causes of people's affective reactions in interpersonal and mental state terms is associated with attachment security, although only a small percentage of variance is shared. The findings indicate that primary school-aged children who provide coherent and emotionally balanced narratives regarding their attachment relationships also show more complex understanding of the affective reactions of others in interpersonal contexts. The concurrent association found between attachment security and affective understanding, is consistent with the earlier finding that infant attachment security predicted children's understanding of mixed emotions as assessed 3 years later (H. Steele et al., 1999). That attachment security explained 7% of the variance in children's ability to consider the causes of other's emotions in interpersonal terms provides support for Fonagy and Target's (2003) hypothesis that attachment is linked to the ability to understand the emotional reactions of others as being interpersonally influenced. Another possible explanation of the findings is that similar abilities are assessed by the CAI and the AT, and that performance on both measures reflects children's proficiency in using emotional narratives (Harris, 2000). This

explanation is not incompatible with Fonagy and Target's (2003) model, although Fonagy and Target (2003) emphasise the importance of parent-infant interactions and attachment, as well as parent-child discussions, parental narratives about emotions and co-construction processes.

The findings presented here provide strong support for the construct validity of the AT as well as for its predictive and discriminant validity. The relationship between children's affective understanding as measured by the AT and IQ was of moderate strength. This was in line with expectations and confirms that the AT measures an ability that is sufficiently distinct from intelligence. Predictive validity was demonstrated in relation to depressive symptoms and social adaptive functioning. Discriminant validity was demonstrated by the finding that differences in children's affective understanding (as measured by the AT) were associated with attachment and psychopathology, after considering the effects of age and IQ.

### *Theory of Mind and Affective Understanding as Measured on the AT*

As hypothesised, the findings confirm that there are significant moderate relationships between children's theory of mind abilities as measured by the HSS and the two dimensions of affective understanding measured by the AT. This indicates that children's ability to understand the intentions of others in interpreting what others say is related to their ability to understand the feelings of others in social contexts.

These significant relationships of moderate strength between mentalisation abilities assessed from the perspective of theory of mind or affective understanding, provide strong support for the convergent validity of the AT and HS. They are in line with what would be expected from a theoretical perspective, given that theory of mind and affective understanding have been hypothesised to be overlapping abilities (Fonagy et al., 2003). These abilities are also seen as being fostered by the same developmental processes, whether the latter are conceived of as being innately and maturationally driven (Baron-Cohen, 1995), or as involving early social learning in the family context (Dunn, 1988), or as being related to attachment and reflective functioning (Fonagy et al., 2003; Fonagy and Target, 2003).

### ***Future Considerations***

The results of this study suggest that the psychometric properties of the two scales are robust and that the interrater reliability based on the AT coding manual is excellent, but replication is required. There are also questions regarding stability of results over time that remain to be answered. A number of suggestions for improving the Impact, Challenge and Internal/External scales have been proposed.

The present study focused largely on children's mentalisation abilities and included no assessments of the parental factors which were identified in previous studies as making significant positive or negative contributions to the development of children's affective understanding. Additional studies designed to assess parental factors and the way they impact on children's affective understanding, affect regulation and empathy (through attachment, narrative and emotional processes) could help to clarify the contribution of parental and parent-child factors to the development of children's mentalisation abilities.

The results of this study indicate that affective understanding as assessed by the AT plays a role in depression and psychopathology. Given these findings, further studies are called for so as to clarify the relationships between factors such as affective understanding, attachment, temperament, executive control and other emotional skills, as well as their interactions with, and contributions to, psychopathology.

Finally, the question arises as to the subsequent development of affective understanding as measured by the AT scales, during adolescence and to the relationship between affective understanding and reflective functioning in early adulthood. The next chapter will focus on the CRFS, and the relationship between performance on the AT scales and the CRFS, will be examined.

### **Conclusion**

In sum, the study results confirm that: 1) the interrater reliability of the AT is excellent; 2) all four AT scales (Accuracy, Justification, Impact and Challenge), have good internal consistency; 3) the AT Accuracy and Justification scales were moderately stable over time; 4) performance on the scales showed significant correlations of moderate strength with intelligence; 5) that child-reports of depressive symptoms and parent-reports of social adaptation made a significant, although relatively small, contribution to the prediction of performance on the AT Accuracy scale; 5) affective understanding was associated with depression and externalisation disorder; 6) the ability to understand the causes of emotions in interpersonal terms was associated with

attachment security; and 7) affective understanding as assessed on the AT showed significant correlations of moderate strength with children's theory of mind abilities as measured by the HSS. These findings confirm that the AT provides a reliable and valid method for assessing affective understanding in primary school-aged children.

## **CHAPTER 6**

### **PSYCHOMETRIC PROPERTIES OF THE CHILD REFLECTIVE FUNCTIONING SCALE**

In this chapter, a new measure, the Child Reflective Functioning Rating Scale (CRFS; Target et al., 2001), will be introduced. This measure was designed to assess the complexity of children's thinking about the interpersonal causes and consequences of feelings, as displayed in the examples they give to illustrate their descriptions of themselves and their close relationships.

The goal of this chapter is to determine whether or not the CRFS has good psychometric properties. The reliability of the scale will be evaluated by examining its interrater reliability, internal consistency and test-retest reliability. The validity of the CRFS will be assessed in the context of the relationships and associations between children's performance on this scale and key demographic variables, IQ, expressive language abilities, social adaptation, psychopathology and attachment.

#### **Introduction**

A number of studies draw attention to the important role of the caregiver's orientation towards the intentionality of their infants in the development of the child's attachment security. These parental abilities have been termed "reflective functioning" (Fonagy, H. Steele, & Moran., 1991) and "mind-mindedness" (Meins et al., 1998) evident in the context of speaking about their own attachment relationships, and parental representations of their infants and children (Slade et al., 1999). At the same time, attachment security has been found to predict children's development of theory of mind abilities and understanding of mixed emotions (Fonagy, Redfern et al., 1997; Meins et al., 1998; Moss et al., 1995), leading Fonagy to conclude that attachment and theory of mind are overlapping constructs. These findings were obtained using measures of children's theory of mind, emotional understanding and cognitive capacities because, up to now, no measure of child reflective functioning was available. The present study addresses this problem by presenting a newly developed child reflective functioning coding system,

designed for use with children aged 8-11, and using transcribed CAI interviews. This will focus on the psychometric properties of the CRFS in order to evaluate whether or not it provides a reliable and valid assessment of children's reflective functioning.

Reflective functioning refers to the ability and propensity to consider both internal states (such as motivations, feelings, thoughts, beliefs and desires) and interpersonal processes in thinking about oneself and close relationships. Fonagy and Target (2003) have argued that reflective functioning, or the ability to consider personal and interpersonal processes in mental state terms, is intimately linked to self-organisation, and that it is a key factor in determining the depth and quality of relationships. This ability is considered to be especially important in the context of challenging life and interpersonal circumstances as it is argued to serve as a protective factor. In the context of abuse, the child's ability to see abusive experiences as related to the abuser or parent, rather than as reflecting something about themselves, helps to protect the child from the worst impact of these experiences (Fonagy et al., 2002). At the same time, Fonagy and Target associate gross deficits in reflective functioning, including the inability to regard affects and mental phenomena as amenable to change, with borderline psychopathology (Fonagy, 1991).

#### ***Developmental Processes which Facilitate the Development of Reflective Functioning***

Fonagy and Target (2003) consider reflective functioning to be acquired interpersonally through the attachment and parent-child relationship, and they identify a number of specific processes in this relationship which contribute to the development of reflective functioning. In early infancy, the parent's ability to think about the infant as mentalising and to attribute intentionality to the infant is considered to be a good predictor of both attachment security and the subsequent development of reflective functioning. Following Gergely and Watson (1996), Fonagy and Target emphasise the importance of the parent's ability to mirror the infant's affect in a way which marks it as an affect not belonging to the parent; this helps the infant to recognise it as their own (Fonagy et al., 2002). This process is considered to be important in nurturing the child's ability to recognise his or her own affects.

During the toddler and pre-school periods, pretend play with the parent is considered by Fonagy and Target (1996) as an important avenue for discovering that thoughts, feelings and other mental states are not real or immutable in the same way as external reality; the child thus begins to comprehend an important aspect of mental states. Fonagy and Target describe this process as involving a change from a psychic



equivalence mode, where ideas and affects are felt to be immutable, to a mentalising mode of experience, and they see the development of children's cognitive abilities (as defined by theory of mind researchers) as enabling this shift. In line with the overwhelming evidence presented in this regard, parent-child discussions about emotions and narrative processes are considered as other key factors.

As for the relative importance assigned to these different processes in the development of mentalisation, Fonagy and Target (2003) propose that early parent-infant interactions lay the foundation for affect regulation, self regulation, sense of self, agency, and intentionality. In their account, this foundation, closely linked to attachment, establishes the early interpretative mechanisms and psychic structures which will influence how children benefit from subsequent experiences, such as pretend play and mental state talk with parents, in the development of reflective functioning. This view is supported by evidence that, at age 6, children who were securely attached to their mothers in infancy had dyadic communication patterns that were fluent and rich in terms of the breadth of topics and emotions expressed (H. Steele et al. 1999). There is considerable evidence from developmental research supporting the role of these processes, attachment, role play, and parent-child emotion-focused discussion, which have been identified by Fonagy and Target (2003) as important for the development of reflective functioning. However, their emphasis on the quality of early parental affect mirroring and attachment remains to be tested through further research.

### *Self and Other Reflective Functioning*

From a reflective functioning perspective, a sense of agency and a sense of knowing what one feels, is as important as understanding of others (Fonagy et al., 2002). From Fonagy and Target's (2003) perspective, this sense of knowing what one feels and who one is, is seen as closely linked to a sense of agency, which in turn is linked to attachment. These abilities are seen as developing through experiences with a caregiver who attributes mentalisation to the infant, and the early coaching of affect recognition through marked affect mirroring is thought to create a sense of control and to additionally help the child acquire the ability to regulate his affect (Fonagy et al., 2002). More recently, Fonagy and Target (2003) outlined a model of pathologies of the self based on the types of failures in affect mirroring. Using Fonagy and Target's model, deficits in the ability to identify and talk about one's own emotions could be traced to deficits and distortions in the type of parental affect mirroring (Fonagy et al., 2002). Fonagy and Target (1995) also consider physical, sexual and emotional abuse with deficits in

children's ability to think coherently about what they are feeling. These children may indeed be quite focused on what others are feeling and may indeed seem remarkably perceptive, but Fonagy and Target suggest that they arrive at this understanding through intellectual learning, rather than through being able to intuit what others feel through an automatic type of identification.

With regard to the ability to understand others, Fonagy et al. (2000) have proposed the existence of an interpersonal interpretative mechanism which develops in the context of the early attachment relationship. This notion of a very early process and ability underlying the ability to understand others is remarkably similar to Baron-Cohen's maturationally driven theory of mind module; however, Fonagy's notion is inherently interpersonal, whereas Baron-Cohen's (2000) is fundamentally biological.

Given that the CRFS distinguishes between self reflective functioning and other reflective functioning, this measure will make it possible to investigate these latter notions empirically. First, the psychometric properties of the scales and measures need to be demonstrated.

### ***Reflective Functioning, Language Development and IQ***

If one proceeds from the definition of reflective functioning, it is logical to wonder if it is largely an indicator of cognitive ability rather than, as argued by Fonagy (1977), being closely linked to attachment. The same applies with regard to expressive language abilities, but the question here is more complex, as the development of expressive language abilities skills can be argued to be facilitated by attachment security and, subsequently, by parent-child emotion-focused discussions.

Oandasan (1999) showed that reflective functioning in primary school children was independent of IQ, and Fonagy et al. (1998) reported a weak relationship between IQ and adult reflective functioning. These findings suggests that intelligence does not play a dominant role in reflective functioning which is in line with Fonagy and Target's (2003) model that links the development of reflective functioning to attachment security. More data is available with regard to the relationship between attachment and verbal intelligence, and between the former and expressive language abilities, but the findings are divergent. No associations between security of attachment and either intelligence or expressive language abilities were reported by Shmueli-Goetz (2001) in a study focusing on 8 to 11-year-olds using the CAI. However, associations between verbal intelligence and attachment status in primary school-aged children have been reported in a number of other studies (Easterbrooks & Abeles, 2000; Verscheuren & Marcoen, 1999; Jacobsen &

Hoffman, 1997). A meta-analytic study by van IJzendoorn et al. (1995) revealed associations between security of attachment and expressive language abilities, but not between attachment security and intelligence.

It has been argued that attachment security predicts cognitive abilities, and Moss et al. (1995) reported that attachment security in the pre-school period was a good concurrent predictor of meta-cognitive ability as manifested in memory, comprehension and communication skills.

It can thus be argued that reflective functioning will show a weak relationship with intelligence and a moderate relationship with expressive language abilities, as the development of expressive language abilities may, in part, reflect the influence of attachment on the child.

In this study, the relationships between primary school-aged children's reflective functioning as measured by the CRFS and their verbal intelligence and expressive language abilities will be examined. Given Fonagy's findings regarding the ARFS, a weak relationship is expected between CRFS performance and verbal intelligence. Based on the fact that, in addition to attachment, parent-child emotion-focused dialogues and narrative elaboration are thought to facilitate the development of reflective functioning, a relationship of moderate strength is expected between child reflective functioning and expressive language abilities.

### ***Individual Differences in Reflective Functioning: Gender, Age, and Family Factors***

At this stage, very little is known about the relationship between reflective functioning and gender, age and family composition. Oandasan's (1999) findings with respect to child reflective functioning, age and gender were inconclusive. There is reason to suspect that, as is true for theory of mind, children's reflective functioning develops with age, as a result of learning, experience and cognitive development. At the same time, it is possible that theory of mind measures such as the HSS and affective understanding measures such as the Affect Task, are more sensitive than measures of reflective functioning to developmental changes occurring during the period from primary school to early adulthood. Given the relative complexity of the ability being assessed, it is also possible that differences in reflective functioning emerge in a way that is only amenable to reliable assessment and evaluation in late adolescence.

No differences in the theory of mind abilities or affective understanding of primary school-aged boys and girls were found in the HSS and AT studies reported in Chapter 4 and 5. Given these findings, significant gender differences in reflective

functioning are not expected. The evidence that pre-school children with access to interactions with adults and siblings, develop faster in terms of theory of mind and affective understanding abilities (Perner et al., 1994; Jenkins & Astington, 1996) reviewed earlier in Chapters 1 and 2. It is argued that siblings provide more opportunities for pretend play, especially role-play, and that this explains why their presence stimulated the development of understanding of others. Pretend play is also considered from a theoretical perspective as being important in the development of reflective functioning; however, Fonagy and Target (1996) also see pretend play with parents as contributing to the process in which children come to discover the difference between psychic reality and external reality.

Associations between security of attachment and intact, two-parent households have also been reported in normal and clinical populations (Greenberg et al., 1991; Solomon & George, 1999; Shmeuli-Goetz, 2001)..

### ***Reflective Functioning, Social Adaptive Functioning and Psychopathology***

Fonagy and Target (2003) have proposed both that affect regulation is a precursor to mentalisation, and that once mentalisation occurs, this in turn allows for adjustment of affect states and gives the child the ability to discover the subjective meanings of his own feelings.

At present, only preliminary data on child reflective functioning and child psychopathology is available (Oandasan, 1999), and it suggests that the relationship between child psychopathology and reflective functioning may not be linear. Oandasan (1999) observed that children referred to outpatient mental health services displayed a wider range of reflective functioning (including both negative and exceptionally high reflective functioning) than non-referred children. She speculates that children develop above average reflectiveness in the context of challenging circumstances; however, this is not necessarily associated with better adaptation. Overactive reflectiveness could also be speculated to resemble depressive ruminations. It remains to be seen whether children who have higher reflective functioning as a result of trying circumstances have an increased or decreased risk of psychopathology over the long term.

Data regarding the reflective functioning of adult psychiatric patients suggests that there is not a direct relationship between low reflective functioning and psychopathology, but that low reflective functioning is a risk factor for developing borderline psychopathology and eating disorders in the context of sexual abuse, for example (Fonagy et al., 1998). At the extreme end of the spectrum, psychopathic and non-

psychopathic prisoners who had committed first-degree murders were found to have significantly lower reflective functioning, when compared with other prisoners and psychiatric inpatients (Fonagy et al.). Less is known about the role of reflective functioning in depression and behavioural disorders.

Up to now, it has not been possible to identify theory of mind deficits associated with depression and behaviour difficulties. Working from an attachment perspective, Shmueli-Goetz (2001) reported that primary school-aged children judged to be insecure on the Child Attachment Interview had significantly more internalising and overall symptoms on the Child Behaviour Checklist. These findings are in line with the relationships between attachment security, clinical status (in terms of the presence of psychiatric signs and symptoms), and behaviour problems in pre-schoolers that Greenberg, et al. (1991) found. It is also consistent with DeKlyen's (1996) findings that the majority (80%) of clinic-referred children were insecure with respect to attachment. Research also suggests that insecure infants are more likely to develop behaviour problems during the primary school years (Erickson, Sroufe, & Egeland, 1985; M. Lewis, Feiring, McGuffog, & Jaskir, 1984; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989). Furthermore, Lyons-Ruth et al. (1993) found that infant attachment disorganisation was the best predictor of teacher ratings of hostile behaviour in 5-year-olds.

Given these findings, it would not be surprising to find a link between child reflective functioning and psychopathology, but it seems much more likely that, as is the case for adults, this will only be revealed in the context of risk factors such as abuse.

### **Aims and Objectives of This Study**

The aims of this study are to present the CRFS and to examine its psychometric properties, including reliability and validity.

The reliability of the CRFS will be established as follows: 1) the revised CRFS coding system and manual will be presented and the interrater reliability results obtained using this manual will be evaluated; 2) the internal consistency reliability of the CRFS scale will be evaluated, after investigating the dimensionality and factor structure of the CRFS; and 3) to establish whether the CRFS has adequate stability over a 3-month test-retest period, as well as after 1 year. These indexes of reliability will be evaluated to determine whether they meet Kline's (2000) criteria for interrater reliability and internal consistency, and the criteria used by Bosson, et al. (2000) for evaluating test-retest reliability. (These criteria will be detailed in the section that addresses the analyses to be

used.)

The validity of the CRFS will be evaluated in the context of the relationships between performance on the CRFS and key demographic variables, IQ and expressive language abilities (as measured on the CELF-R), psychopathology (as measured on the CBCL and CDI), social adaptation (as measured on the CAFAS), self-esteem (as measured on the Harter) and attachment (as measured on the CAI). These relationships will be examined with the following objectives in mind: 1) to establish the performance of the scale with regard to gender and family composition; 2) to evaluate the construct validity of the CRFS in the context of its relationships age, IQ, expressive language abilities, psychopathology and social-adaptation; 3) to evaluate the predictive validity of the CRFS by examining whether or not factors other than age and intelligence predict children's affective understanding; 4) to evaluate the discriminant validity of the CRFS by examining whether or not there are differences in the affective understanding as a function of attachment security and clinical psychopathology, while adjusting for age and IQ; 5) to evaluate the concurrent and convergent validity of the CRFS by examining the relationships between performance on the CRFS and two other measures of socio-cognitive mentalisation abilities, the HSS and AT.

The hypotheses corresponding to each of these objectives will be outlined below.

### ***Hypotheses***

#### ***Gender and Family Composition***

No gender differences in reflective functioning are expected, given the divergent findings with regard to gender and constructs closely related to reflective functioning, such as theory of mind and affective understanding.

In light of the emphasis on the quality of the parent-child relationship in the model of the development of reflective functioning, the hypothesis is that there will be no significant differences between the reflective functioning of only children and that of children with siblings. Instead, the hypothesis is that children of caregivers who do not have formal employment, i.e., "stay-at-home" caregivers, will have higher reflective functioning than children of working mothers. Given previous findings that primary school-aged children in single-parent families are more likely to have insecure attachment classifications (Greenberg et al., 1991; Shmeuli-Goetz, 1999; Solomon & George, 1999), the hypothesis is that the reflective functioning of children of single-parents will be lower than that of children living in two parent families.

### ***Reflective Functioning and Age, IQ, Expressive language, Psychopathology and Social Adaptation***

A weak relationship between age and children's reflective functioning is expected, given that the CRFS is used with a relatively narrow age range. On the basis of previous research showing a weak relationship between intelligence and adult reflective functioning (Fonagy et al., 1998), a weak to moderate relationship between intelligence and child reflective functioning is expected. A relationship of moderate strength is expected between children's expressive language abilities and their reflective functioning, given the important role that parent-child discussions are considered to play in the development of children's reflective functioning (Fonagy & Target; 2003).

Considering previous findings that reflective functioning and psychopathology do not have a simple linear relationship (Fonagy et al., 1998), a significant relationship between reflective functioning and psychopathology is not expected, but a relationship between reflective functioning and social adaptation (as measured on the CAFAS) is expected, given that the ability to make sense of the reactions of others, and of one's own reactions is thought to facilitate social adaptive functioning.

### ***Predictors of Children's Reflective Functioning***

It is expected that attachment security will predict children's reflective functioning as measured on the CRFS-Self and CRFS-Other, in addition to age and IQ, as mentioned earlier. This is based on Fonagy and Target's (1997) thesis that attachment predicts, and is closely related to, reflective functioning.

### ***Differences in Reflective Functioning as a Function of Attachment and Psychopathology***

Children's mentalisation abilities, as measured by the CRFS, are expected to differ as a function of attachment security. In light of the fact that attachment is considered to be a related construct and the findings that attachment predicts affective understanding (H. Steele et al., 1996), differences in reflective functioning of secure and insecure children are expected to remain significant after adjustments for other contributors. On the basis of the findings that lower reflective functioning is not necessarily related to psychopathology and that it interacts with risk factors (Fonagy et al., 1998), the hypothesis is that no significant differences will be found as a function of psychopathology (as assessed on the CBCL and CDI), once the contribution of other factors such as age and IQ are taken into account.

### ***Convergent Validity of Measures of Mentalisation***

The hypothesis is that children's performance on the three measures of children's mentalisation abilities will converge, and moderate to strong relationships are expected between their performance on the HSS, AT and CRFS as these are related constructs. It can be contended that theory of mind and affective understanding are developmental precursors of reflective functioning, as argued by Fonagy and Target (2003).

## **Method**

### ***Participants and Recruitment***

The CRFS was used to code the CAI data of a sample of 61 children aged 8-11, all recruited from referrals to Child and Adolescent Mental Health Services in London. This study forms part of a larger project of measure development and standardisation conducted at the Anna Freud Centre, London, UK (see Chapter 3 for a detailed discussion of the recruitment procedure).

The sample comprised 40 boys (63.5%) and 23 girls (36.5%); with respect to age, there were no differences between boys ( $M_{\text{age}} = 9.2$ ,  $SD = 1.7$ ) and girls ( $M_{\text{age}} = 9.0$ ,  $SD = 1.3$ ),  $t(61) = .46$ , ns.

The vast majority of the children lived with their biological mothers (93%). Approximately half lived in two-parent families (49.1%) and with both biological parents (45.6%). The majority of the children were Caucasian (66%) and the vast majority (95.5%) spoke English at home. Many were only children (41%) or had only one sibling (37.7%), and those with two or more siblings (21.3%) were in a minority. In terms of maternal educational levels, the sample was roughly equally distributed between mothers with secondary school education (32.4%), those with college education (35.1%) and those with university education (32.4%). More than half the mothers were not employed at the time of the interview (58.8%), but the majority of the fathers were employed (66.7%). Using the ten standard employment categories included in the UK census, 46.4% of families had specialised technical, professional and managerial occupations, and 37.4% were employed in occupations involving sales, personal services, skilled trades, administrative or secretarial work. The remainder consisted of manual workers (3.6%) and those who were retired, homemakers or unemployed (1.7%).

In terms of attachment status, 23.8% of the children were classified as securely attached to their mothers, and 76.2% as insecurely attached (including disorganised). With regard to the attachment status of the mothers, Adult Attachment Interview data was



available for 43 cases, and on the basis of this data 27,9% of the mothers were classified as securely attached and 72,1% as insecurely attached.

### *Instruments*

#### *Development of the Child Reflective Functioning Scale*

The Child Reflective Functioning Scale was adapted from the Adult Reflective Functioning Scale (ARFS: Fonagy et al., 1998) by Oandasan (1999), a child psychiatrist, who undertook the work as part of her Master's thesis, under the direction of Mary Target. The CRFS was developed to assess the extent to which primary school-aged children consider themselves and their significant relationships in mental state terms, and it was designed for use with children aged 8-11. The CRFS was designed in light of the findings of Shmeuli-Goetz (2001) using the Child Attachment Interview; the latter had raised concerns regarding the reliable assessment of these abilities in younger children. Her work confirmed that, in fact, primary school children aged can respond in a meaningful manner to direct questions about themselves, their attachment relationships and situations of conflict.

The CRFS was originally designed for use with the Child Attachment Interview (CAI: Target et al., 2000; see Appendix D1); this approach is thus parallel to that in which the ARFS is used to rate AAA data. Like the ARFS, the CRFS can be applied to data obtained using other interviews, e.g., Oandasan (1999) has used it with interview data regarding relationships with peers and close friends. The important caveat is that reflective functioning, like attachment, is revealed in the context of speaking about oneself and one's close relationships (Fonagy & Target, 2003), and it is expected that it will be most evident in the context of being asked to describe specific incidents which reveal something about the self, interpersonal interactions and affective reactions. These descriptions require a process of retrieval of specific events and narratives, and these episodic or autobiographical memories are expected to provide a good indicator of the child's "working knowledge" of mental states and of both intrapersonal and interpersonal thinking. These memories are expected to reflect an ability quite different from that demonstrated when the child describes relationships in general terms; in the latter case, intellectual ability is expected to play a greater role. It is argued that children's general use of mental state constructs when thinking about themselves and their close relationships is an over learned skill, like riding a bicycle. It is very likely that failures and strengths in reflective functioning are revealed more in the context of accessing, recalling and presenting episodic memories than in providing a description of

relationships in more general terms (Fonagy & Target, 2003). In this respect, the structure of the adult and child attachment interviews, which ask specifically for examples illustrating why a particular adjective was chosen to describe the self or a close relationship, is ideal for assessing reflective functioning.

Oandasan (1999) drafted a coding system based on 20 attachment interviews involving 12 children referred to Child and Adolescent Mental Health Services and 8 children recruited from schools. The coding system uses a hierarchical approach and distinguishes between 10 levels of reflective functioning going from negative reflective functioning to exceptional reflective functioning. An overall score was obtained on the basis of the judgement of the coder and by taking into account the highest scores as well as the presence of negative or absent reflective functioning. Based on a pilot study using the CRFS, Oandasan reported a distribution of scores over the full range of the scale, although children mostly used physical or behavioural descriptions.

Based on a small pilot study of 11 cases, Oandasan (1999) reported good interrater reliability between two raters. In spite of these promising results, she also reported significant problems with missing data; as a result, data of 50% of the cases was not analysable. "I don't know" responses were also identified as a major problem, and these were coded as missing data. As part of the work undertaken for this thesis, the problem of missing data was investigated and addressed.

### ***Revised CRFS Manual and Analysis of Missing Data***

The earlier draft of the CRFS coding system was amended and a new manual was written by the author in consultation with Mary Target. The manual was thus elaborated and examples of different levels of reflective functioning were added (see Table 43 and Appendix D2). A detailed investigation of the pattern of missing data was first undertaken. It revealed a second problem in addition to that of coding "I don't know" answers as missing data, i.e., all CAI demand questions were coded for reflective functioning, despite the fact that children may not have experienced the life event in question. These two contributors to the missing data problem and the related solutions that were implemented will be discussed in turn.

The lack of provision for "I don't know" answers in the rating scale and their subsequent treatment as missing values contributed in large part to the missing data problem. An initial concern was that children gave these answers in response to inappropriate questions; thus, there was concern that these answers were indicative of shortcomings in the interview procedure, rather than the child's mentalisation ability. However, the pattern of these answers suggested that, in fact, they were given in response

to appropriate questions and were thus valid data.

Table 43

*Outline of the Revised Child Reflective Functioning Rating Scale*

Level	Description of level of reflective functioning (RF)
-1	Response marked by active evasion of mentalising shown through hostile criticism of the interview or interviewer, or reactions such as freezing and becoming completely silent. Bizarre and inappropriate explanations also fall under this category and are considered a type of active evasion of RF.
0	No evidence of active evasion, but child unable to respond, says "I don't know" to some questions in the context of an interview with other responses at higher levels.
1	Absent but not repudiated reflective functioning: explanations are given in physical or behavioural terms and there is no evidence of thinking in terms of mental states.
3	Low RF: Response includes references to mental states but with limited elaboration of the response, alternatively, an elaboration of the response only approximates a clear RF type and the rater must "fill in the gaps" in the child's response in order to clearly define the response as an RF response type.
5	Definite RF: The response may be fairly simple and unsophisticated, but must be described clearly and briefly reflected upon. Explicit reference is made to how mental states are related to contexts, relationships, behaviour, or mental states in relation to the interviewer.
7	Marked RF: The response is more elaborated, sophisticated It may reflect an original view of a mental state which is not bizarre, or include an account of complex multilayered mental states, or an account where mental states are placed within a causal sequence
9	Full and exceptional RF: The response clearly rates a "7", but is more sophisticated in description and elaboration either in the degree of complexity presented, the completeness of the causal account, the account of mental states of all the protagonists within an interaction, the degree of surprise the rater experiences at the subject's understanding, or the intricacy of the interaction between mental states presented.

For example, children often gave “I don’t know” answers in response to questions about themselves; such answers may thus reflect the child’s ability or inability to think about himself. The observation that “I don’t know” answers were also common in response to questions concerning fathers raised concerns that the questions were asked by interviewers when it was inappropriate, i.e., that they were being asked of children who had little contact with their fathers. To address this concern, a detailed examination of children’s response patterns and their actual home circumstances was completed. This revealed that, contrary to expectations, children who lived with both parents gave “I don’t know” responses as frequently as others, indicating that lack of contact with fathers was not the main reason for these answers. In cases in which the child’s father is deceased or there is no contact at all, the interviewer is aware of this, given that the interview starts with a description of the family situation so as to frame the questions appropriately. In the revised manual, “I don’t know” answers are treated as data rather than as missing values, and they are rated as indicating an absence of mentalisation. They are rated lower than answers which are given in physical and behavioural terms, but higher than bizarre or negative responses. This method of rating “I don’t know” answers as Level 0 responses is also used by Kusche et al. (1988), it follows the guidelines of Carroll and Steward (1984) for coding answers regarding reasoning about feelings.

Also identified as contributing to missing data was the fact that Oandasan’s rated all CAI responses (Oandasan, 1999). This meant that when children had not yet experienced a particular life event, such as a death or a loss in the family, and could not therefore answer, their provide answer to questions regarding these events, their “I don’t know” responses were coded as missing data. The examination of this aspect of the missing data problem drew attention to the wide range and level of experiences and traumas children were exposed to, which made it extremely complex, if not impossible, to code certain questions in a reliable manner. Accordingly, the new manual, only selected questions from the CAI were selected for RF rating: 1) the three self description questions; 2) the self upset question; 3) the three relationship with mother questions; 4) the mother cross/upset question; 5) the relationship with father question; 6) the father upset question; and 7) the parents argue question. The rationale for proposing this particular set of questions is that it is applicable to all children, and includes questions about the self, relationships, and affectively charged situations.

A further aim of the present study is to identify the most efficient and reliable way to aggregate CRFS item scores, this will be determined by analysing the dimensionality and scale properties of the CRFS.

### ***Other Measures***

Results for two parent-report measures will also be reported here namely the Child Behaviour Checklist (CBCL: (Achenbach & Edelbrock, 1983) and the Child Adaptation and Functioning Scale (CAFAS: Hodges et al., 1998). Six child-report measures will also be used, including two measures of depression and anxiety, namely the Child Depression Inventory (CDI: Kovacs, 1992) and the State and Trait Anxiety Scale for Children (STAIC: Spielberger et al., 1970), a measure of child self-esteem, Harter's Self-Perception Profile (Harter: Harter, 1985,1999), and the Child Attachment Interview (CAI: Target et al, 2000). In addition, a short form of the Wechsler Intelligence Scale for Children - Third UK Edition (WISC-III<sup>UK</sup>: (Wechsler, 1991) will be administered to estimate IQ, and the Clinical Evaluation of Language Fundamentals-Revised (CELF-R: Semel et al., 1987) will be administered to assess expressive language abilities. These measures were presented in detail in Chapter 3.

### ***Procedure***

The procedure of the Anna Freud Centre Standardisation Study was presented in Chapter 3. All interviews were conducted in a quiet room at school, at home or at the Anna Freud Centre, and the interviews and assessments were completed over 2 to 3 sessions. The CRFS is used to rate videotaped CAI data. On average, the CAI interview takes 60 minutes to complete. Test-retest data is available for 18 children, and 53 families returned after a 1-year period to complete the same battery of tests.

### ***Raters and Coding Procedure***

Four raters were trained to use the CRFS coding system. Two raters had completed 3 years of undergraduate psychology training and two had post-graduate qualifications in psychology. Three were female and one was male. Approximately 40 hours of training were required for raters to become familiar with the coding manual. Once raters were able to reach 80% agreement on 10 transcribed training interviews, they received 30 new transcripts of videotaped CRFSs for the interrater reliability study. The sub-sample that was used for the interrater reliability study was selected to include a roughly even number of boys and girls of all age groups, as well as a range of types and levels of psychopathology. Once familiar with the coding manual, took approximately 45 minutes to rate a single interview.

### ***Planned Data Analyses***

To establish the interrater reliability, the intraclass correlations (ICC) using Bartko's two-way random effect model computed to provide an estimate of agreement

between raters for the scores on individual stories, as well as total scores (Bartko, 1976; W. T. Carpenter, 1976). Following the guidelines of Endicott and Spitzer (1978) for interpreting ICC's, values above .75 will be considered as indicative of good reliability; between .50 and .75, as fair; and values below .50, as reflecting poor reliability. To establish the stability of the CRFS over time, Pearson product-moment correlations ( $r$ ) between the scores at time 1 and after a 3-month interval are calculated. Following Murphy and Davidshofer (2001), moderate test-retest correlations of .6 and above will be considered as acceptable; test-retest correlations of .5 and above will be regarded as low; and below .5, as poor. This more tolerant approach to assessing test-retest reliability was used in view of the fact that children recruited from referrals to mental health services constituted a large part of the sample; as a result stability in measure scores over time is expected to be much lower (Kline, 2000). This may be because children with mental health problems or who are experiencing other problems or acute life stressors show fluctuations in motivation and ability to focus on these tasks.

To examine the factorial structure of the CRFS, stories with good interrater reliability are selected and a factor analysis is performed to investigate the dimensionality of the CRFS (as administered using the revised coding manual). Next, the internal consistency reliability of the stories is evaluated using Cronbach's alpha, with alpha coefficients of .7 regarded as indicating of good internal consistency (Kline, 2000).

The relationships between CRFS and age, IQ, expressive language, demographic variables, gender and family composition are examined using Pearson product-moment correlations ( $r$ ) and  $t$ -tests. Significant relationships are then taken into account in subsequent analyses. In order to determine if intelligence is the main predictor of child reflective functioning, if psychopathology, social adaptation and attachment make a significant contribution to the prediction of child reflective functioning (as measured by the CRFS), a stepwise multiple regression analysis is employed. This regression is performed with the data set optimised using Full Information Maximum Likelihood (FIML) estimates computed using the AMOS software (Arbuckle, 1994) with estimates being made in cases for which at least 60% of data is available. Analyses based on FIML estimates have been shown to be more reliable than those in which cases with incomplete are deleted (Arbuckle, 1994).

Differences in CRFS as a function of clinical levels of behavioural and emotional difficulties (as measured on the CDI and CBCL) are investigated using a one-way analysis of covariance (ANCOVA). Subsequently, differences in CRFS performance as a function of attachment security are investigated using ANCOVA.

## Results

### *Performance of the CRFS*

Means and standard deviations for the CRFS are provided in Table 44. Results indicate that primary school-aged children have scores across the full range of the CRFS scale. Mean scores for the CRFS items ranged from .83 (3<sup>rd</sup> Self-description) to 3.51 (Mother upset); *SDs* ranged from 1.53 to 2.7.

### *Reliability of the Revised Child Reflective Functioning Rating Scale (CRFS)*

Three standard indexes of reliability are then assessed namely interrater reliability, internal consistency and test-retest of the CRFS.

Table 44

*CRFS: Means, Standard Deviations and Interrater Reliability*

Items	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>ICC</i>
Self 1	1.62	1.72	-1	5	.61
Self 2	1.16	1.82	-1	7	.64
Self 3	.80	1.74	-1	7	.64
Self Upset	1.90	2.02	-1	7	1.0
Mum 1	1.84	1.53	-1	7	.71
Mum 2	1.33	1.59	-1	6	.93
Mum 3	.62	1.55	-1	6	.96
Mum Upset	3.51	2.09	-1	8	.70
Dad 1	1.24	1.59	-1	9	1.00
Dad 2	.78	1.90	-1	6	.90
Dad 3	.20	1.80	-1	5	.99
Dad Upset	2.38	2.70	-1	8	1.00
Parents Argue	1.54	2.57	-1	8	.94

Note. *N* = 63 for sample descriptives, and *n* = 30 for ICC's

### ***Interrater Reliability of the Revised CRFS***

The first step in examining the psychometric properties of the revised CRFS rating system was to examine the interrater reliability for each of the items. Interrater reliability was evaluated using intraclass correlations (ICCs: Bartko, 1976)

The resulting intraclass correlations ranged from .61 (Self 1) to 1.00 (Self Upset, Dad 1, and Dad Cross) with a median of .93 (see Table 44). Once raters had separately rated the items, they compared their scores and rendered consensus ratings reached through discussion. On the rare occasions when raters were unable to reach consensus, the author served as mediator. Consensus ratings were used in subsequent analyses.

### ***Factor Analysis of the CRFS***

After it was confirmed that the interrater reliability of all the items were in the fair to good range, the correlations among the different items were examined. The Pearson product-moment correlations ( $r$ ) were calculated and ranged from .11 to .68 (see Table 45), suggesting that more than one factor may be involved. The factor structure of the CRFS was investigated using principal components analysis with a varimax rotation. On the basis of theoretical expectations and the scree test, two factors were rotated. The results of the rotated solution identified two factors, a self and another factor. The self factor showed high loadings on all the self description items as well as on the first description of relationship with mother. The other factor showed high loadings on the parents argue, relationship with dad, and dad upset items (see Table 46). The two factors explained 55.9% of the variance. Only one item, the second description of the relationship with mum, loaded on both factors.

The factors identified by the analysis were in line with theoretically and empirically based expectations, namely, that reflective abilities regarding the self and others are related but distinct, and are linked to slightly different developmental and cognitive factors, as suggested by Fonagy and Target (2003). The ability to identify and understand one's own affects and to mentalise about these and other characteristics of the self is considered to be closely linked to the quality of the attachment relationship, whereas a number of other factors, including intellectual capacity, are considered to be related to the ability to mentalise about others and relationships. The item composition of two factors is in line with this developmental model. These two factors were used to form two CRFS scales, a CRFS-Self scale and a CRFS-Other scale.



Table 45

*CRFS: Correlation Matrix Used for Factor Analysis*

	2	3	4	5	6	7	8	9	10	11	12	13
1. Self 1	.59***	.49***	.28*	.53**	.31*	.23	.34**	.22	.34**	.21	.30*	.19
2. Self 2	-	.59***	.24	.58***	.44***	.28*	.29*	.28*	.46***	.28*	.21	.26*
3. Self 3		-	.18	.43**	.31*	.19	.27*	.19	.41**	.27*	.19	.11
4. Self Upset			-	.42**	.19	.48***	.45***	.34**	.49***	.48***	.51***	.50***
5. Mum 1				-	.48***	.27*	.24	.53***	.56***	.39**	.31*	.43**
6. Mum 2					-	.43**	.42**	.40**	.50***	.42**	.40**	.39**
7. Mum 3						-	.46***	.33*	.54***	.49***	.38**	.40**
8. Mum Upset							-	.44**	.48***	.32*	.63***	.45***
9. Dad 1								-	.39**	.33*	.49***	.38**
10. Dad 2									-	.57***	.59***	.68***
11. Dad 3										-	.32*	.56***
12. Dad Upset											-	.46***
13. Par Argue												-

$N = 63$ ; \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 46

*CRFS: Factor Pattern Matrix from Factor Analysis*

Items	Child Reflective Functioning Factors	
	Other	Self
Parents Argue	.78	
Relationship with Dad 2	.75	
Dad Upset	.74	
Self Upset	.70	
Relationship with Dad 3	.68	
Relationship with Mum 3	.67	
Mum Upset	.65	
Relationship with Dad 1	.58	
Relationship with Mum 2	.50	.45
Self Description 2		.86
Self Description 3		.80
Self Description 1		.76
Relationship with Mum 1		.65
% of Variance Explained	43.13	12.76
Eigenvalue	.83	.56

*N* = 63**Item-Total Statistics**

Item-total correlations and alpha coefficients were calculated separately for the CRFS-Self and CRFS-Other scales (see Table 47). Item-total correlations of CRFS-Self ranged from .48 to .74, and the internal consistency of CRFS-Self was good, with  $\alpha = .82^5$ . Item-total correlations for the nine items of CRFS-Other ranged from .53 to .75, and the internal consistency was good, with  $\alpha = .88$ . The high  $\alpha$  coefficients of

<sup>5</sup> Coefficient alpha of .70 is regarded as minimum to ensure good reliability (Kline, 2000).

CRFS-Other and CRFS-Self indicated that they were reliable scales; consequently, the CRFS-Other and CRFS-Self will be used in subsequent analyses.

Table 47

*CRFS: Item-total Correlations and Alpha-coefficients for the CRFS-Other and CRFS-Self*

Items	Child Reflective Functioning Scales	
	CRFS-Other	CRFS-Self
Parents Argue	.67	
Relationship with Dad 2	.75	
Dad upset	.68	
Self Upset	.62	
Relationship with Dad 3	.59	
Relationship with Mum 3	.58	
Mum Upset	.68	
Relationship with Dad 1	.53	
Relationship with Mum 2	.75	
Self Description 2		.59
Self Description 3		.74
Self Description 1		.60
Relationship with Mum 1		.63
Scale Alpha	.88	.82

*N* = 63

### ***Test-Retest Reliability***

Pearson product-moment correlations were used to investigate the test-retest reliability of the CRFS after a 3-month period as well as to explore the temporal stability of the CRFS over a 1-year period.

The 3-month test-retest correlations of the CRFS show that children's performance on the CRFS-Other remains highly stable, and their performance on the CRFS-Self shows moderate stability. With regard to stability after a 1-year interval, the correlations for both CRFS-S and CRFS-O show moderate stability (see Table 48).

Table 48

*CRFS: Three-Month and One-Year Temporal Stability*

		<i>Time 1</i>		<i>Time 2</i>		
Interval	<i>n</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>r</i>
Three Month						
CRFS-Self	18	14.7	8.0	12.6	4.5	.67**
CRFS-Other	18	26.0	12.7	28.5	1.7	.86***
One year						
CRFS-Self	53	14.5	6.3	15.9	5.6	.59***
CRFS-Other	53	25.5	15.1	26.9	1.8	.63***

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

***Validity of the Revised Child Reflective Functioning Scale (CRFS)***

Three types of validity are assessed, namely, construct, predictive, and discriminant validity, in relation to a number of different hypotheses.

***Relationship between Performance on the CRFS, Gender and Family Composition***

Student *t*-tests were used to investigate the effects on CRFS performance of gender, living in two-parent families rather than single parent families, the employment status of caretakers, and the presence of siblings.

No gender effect was found for either CRFS-Self,  $t(61) = -.42$ ,  $p = .68$ , ns, or CRFS-Other,  $t(61) = -.22$ ,  $p = .83$ , ns. Children living in one parent families, that is, with mother only, had significantly higher mean CRFS-Self scores ( $M = 13.73$ ,  $SD = 6.62$ ) than those living in two-parent families ( $M = 1.15$ ,  $SD = 5.68$ ),  $t(57) = -2.23$ ,  $p < .05$ . However, there were no significant differences between the two groups with regard to CRFS-Other,  $t(57) = -1.10$ ,  $p = .28$ , ns. Similarly, children whose primary caregiver were at home had significantly higher mean CRFS-Self scores ( $M = 13.03$ ,  $SD = 6.53$ ) than did children whose mothers were employed ( $M = 9.00$ ,  $SD = 5.38$ ),  $t(57) = -2.37$ ,  $p < .05$ . However, there were no significant differences in CRFS-Other scores,  $t(57) = -1.43$ ,  $p = .16$ , ns. Further investigation of these findings confirmed that other factors, such as

differences in maternal educational level or socio-economic status, did not account for these results.

The difference between the CRFS performance of children with siblings ( $n = 26$ ) and that of only children ( $n = 37$ ) was non-significant with regard to both CRFS-Self,  $t(61) = .29$ ,  $p = .77$ , *ns*, and CRFS-Other,  $t(61) = 1.00$ ,  $p = .32$  *ns*.

### ***Relationship between Performance on the CRFS and Age, IQ and Expressive Language***

In order to explore the validity of the CRFS, correlations were examined between the two CRFS scales, age, IQ and expressive language. As can be seen from Table 49, significant positive correlations were only found between CRFS-Self scores and expressive language (as measured on the CELF-R), and between CRFS-Other scores and Full Scale IQ. These ranged from .26 to .37, indicating relationships of moderate strength.

Table 49

#### ***CRFS: Correlations with Age, IQ and Expressive Language***

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	CRFS-Other <i>r</i>	CRFS-Self <i>r</i>
Age	63	9.0	1.57	6	12	.18	.21
WISC Full IQ	61	95.2	19.8	52	146	.26*	.24
WISC Verbal IQ	61	101.4	19.5	65	155	.24	.18
WISC Performance IQ	61	89.4	2.4	46	143	.18	.21
CELF-R Exp. Language	43	87.5	15.9	50	137	.28	.37*

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

### ***Contributions of IQ, Psychopathology and Social Adaptation to Predicting CRFS Performance***

Regression analysis was conducted using the Full Information Maximum Likelihood estimates (Arbuckle, 1994) to optimise our database through estimation of missing measure scores. The principal causes of missing data were the late introduction of certain measures in the standardisation study and the fact that families frequently cancelled appointments or did not return self-report forms, so that complete data for the full battery was not available. There was no evidence that data was missing in any

systematic way that could contribute to bias in the estimation of missing values from the existing data. Missing data was estimated when more than 60% of data was available.

Regression analysis was conducted to determine if the addition of scores on measures of psychopathology and adaptation improved the prediction of performance on the CRFS over and above age and IQ. The potential predictors were first examined by looking at their correlations with reflective functioning (see Table 50). Age, IQ, depression (CDI) and social adaptation (CAFAS) were selected as the independent variables, and two regression analyses were then conducted, the first with the CRFS-Self as the dependent variable and the second with CRFS-Other as the dependent variable.

Table 50

*CRFS: Correlations with Potential Predictors*

Predictor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>CRFS-Other</i> <i>r</i>	<i>CRFS-Self</i> <i>r</i>
Age	63	9.13	1.57	.11	.21
WISC Full-Scale IQ	61	95.15	19.78	.26*	.24
CBCL (Int)	60	65.17	11.07	.10	.20
CBCL (Ext)	60	59.73	12.05	-.10	.08
CBCL (Total)	60	64.25	1.83	-.08	.09
CAFAS (Total)	63	3.95	2.30	-.27*	-.25*
STAIC – State	43	46.98	11.16	-.20	-.17
STAIC – Trait	43	52.23	12.03	-.06	-.03
CDI ( <i>t</i> -score)	50	65.17	11.07	-.20	-.25
Harter Self-Perception	42	1.9	.70	.03	.04

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ .

The results of the two AMOS regression analyses are reported in Table 51. The standardised regression coefficients or betas ( $\beta$ ) reflect the impact on the outcome variable when the predictor variables increase one standard deviation. The latter also allows for an assessment of the relative importance of predictor variables. The critical ratio is used to evaluate whether or not the standardised regression coefficients are significant, with critical ratios of above 1.96 indicating that the predictor variables make a significant contribution to child reflective functioning when the significance level is set to  $p < .05$ . As can be seen in Table 51, age ( $\beta = .23$ ) and attachment security ( $\beta = -.26$ ) make significant contributions to the prediction of Self reflective functioning when the significance level is set to  $p < .05$ . The second regression analysis with Other reflective functioning as the dependent variable also identifies age ( $\beta = .21$ ) and attachment security ( $\beta = -.23$ ) as the independent variables which make significant contributions to the prediction of Other reflective functioning in children.

Table 51

*CRFS Factors: AMOS Regression Analysis with Potential Predictors*

Predictor	B	SE	$\beta$	CR
CRFS-Self				
Age	.88	.75	.23	2.18*
Full IQ	.04	.03	.15	1.53
CDI	-.07	.05	-.14	-1.36
CAFAS	-.03	.03	-.12	-1.20
CAI	-3.29	1.28	-.26	-2.56*
Model				.18
CRFS-Other				
Age	1.65	.75	.21	2.19*
Full IQ	.10	.06	.17	1.71
CDI	-.12	.10	-.12	-1.36
CAFAS	-.10	.06	-.17	-1.73
CAI	-5.80	2.57	-.23	-2.26*
Model				.17

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

### *Clinical Levels of Psychopathology and Performance on the CRFS*

One-way analysis of covariance (ANCOVA) was used to investigate differences between the CRFS performance of children with CBCL scores in the clinical range and that of non-clinical groups, after taking into account the effects of age and IQ. The dependent variable was CRFS performance, and the independent variable was clinical status as determined by the CBCL (clinical and non-clinical). Two analyses were conducted, the first with CRFS-Self as the dependent variable, and the second with CRFS-Other as the dependent variable. The covariates were age and IQ. The analyses were performed for CBCL Total score, CBCL Internalising subscale, and CBCL Externalising subscale.

With respect to CRFS-Self, initial comparisons of the observed means of clinical and non-clinical groups (based on the CBCL scales) showed an unexpected pattern: children with internalising difficulties in the clinical range showed higher CRFS-Self scores than other children (see Table 52). The pattern of scores for children with externalising difficulties was as expected; it showed that children with scores in the clinical range had lower reflective functioning. However, after adjustment for verbal IQ, none of the differences remained significant (see Table 53).

Table 52

*CRFS: Performance of Children with Clinical and Non-Clinical CBCL Scores*

Scale	Non-Clinical					Clinical				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
CBCL Internalising										
CRFS-S	52	11.83	4.55	11.88	.79	33	12.03	7.14	11.94	.99
CRFS-O	52	23.84	6.19	23.61	1.22	33	21.08	11.67	21.31	1.51
CBCL Externalising										
CRFS-S	64	12.17	5.60	12.08	.71	21	11.10	5.91	11.37	1.25
CRFS-O	64	22.58	8.60	22.32	1.08	21	18.00	10.21	18.81	1.91
CBCL Total										
CRFS-S	57	12.60	5.63	12.52	.74	28	10.50	5.55	10.66	1.06
CRFS-O	57	22.89	8.18	22.64	1.14	28	18.50	10.57	19.00	1.63



Table 53

*CRFS – Self: Comparing Children with Clinical and Non-Clinical CBCL Scores*

Source of variance	<i>Adjusted</i> <i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$	<i>Adjusted</i> <i>R</i> <sup>2</sup>
CRFS-Self							.01
CBCL Internalising	.06	1	.06	.00	<i>ns</i>	.000	
Covariates							
Age	37.74	1	37.74	1.19	<i>ns</i>	.015	
Verbal IQ	82.00	1	82.00	2.60	<i>ns</i>	.031	
Error	2559.45	81	31.60				
CRFS-Self							.02
CBCL Externalising	7.59	1	7.59	.24	<i>ns</i>	.003	
Covariates							
Age	41.29	1	41.29	1.31	<i>ns</i>	.016	
Verbal IQ	68.68	1	68.68	2.18	<i>ns</i>	.026	
Error	2551.93	81	31.51				
CRFS-Self							.04
CBCL Total	63.50	1	63.50	2.06	<i>ns</i>	.025	
Covariates							
Age	41.21	1	41.21	1.34	<i>ns</i>	.016	
Verbal IQ	61.79	1	61.79	2.01	<i>ns</i>	.024	
Error	2496.01	81	30.82				

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

With respect to CRFS-Other, initial comparisons revealed differences between the observed means of clinical and non-clinical groups (based on the three CBCL scales) with children scoring in the clinical range showing lower reflective functioning in relationships

with others (see Table 52). However, after adjustment for verbal IQ, none of the differences remained significant (see Table 54).

Table 54

*CRFS – Other: ANCOVA Comparing Children with Clinical and Non-Clinical CBCL Scores*

Source of variance	<i>Adjusted SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i><math>\eta^2</math></i>	<i>Adjusted R<sup>2</sup></i>
CRFS-Other							.06
CBCL Internalising	7.38	1	7.38	.04	<i>ns</i>	.000	
Covariates							
Age	345.64	1	345.38	1.86	<i>ns</i>	.022	
Verbal IQ	1199.43	1	1199.43	6.21	*	.071	
Error	14143.12	81	169.61				
CRFS-Other							.08
CBCL Externalising	268.53	1	268.53	1.33	<i>ns</i>	.016	
Covariates							
Age	409.76	1	409.76	2.22	<i>ns</i>	.027	
Verbal IQ	924.86	1	924.86	4.90	*	.057	
Error	13888.89	81	171.46				
CRFS-Other							.09
CBCL Total	493.98	1	493.98	2.80	<i>ns</i>	.033	
Covariates							
Age	390.33	1	390.33	2.16	<i>ns</i>	.026	
Verbal IQ	966.85	1	966.85	5.16	*	.060	
Error	13656.46	81	168.59				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

ANCOVA was also used to investigate differences between the CRFS performance of children with CDI scores in the clinical range, and that of others, after taking age and verbal IQ into account. The dependent variable was CRFS performance, and the independent variable was clinical status (as determined by their CDI scores), with clinical defined as scores of 70 and above and non-clinical as scores below 55. Two analyses were conducted, the first with CRFS-Self as the dependent variable and the second with CRFS-Other as the dependent variable. The covariates were age and IQ. Only five children reported symptoms of depression in the clinical range, making the results tentative. As can be seen in Table 55, depressed children had lower mean CRFS-Self and CRFS-Other scores than their non-depressed peers, but none of these differences remained significant after adjustment for age and verbal IQ. The ANCOVA with CRFS-Self and CRFS-Other were both non-significant (see Tables 56).

Table 55

*CRFS: Performance of Children with Clinical and Non-Clinical CDI Scores*

Scale	CDI					CDI				
	Non-Clinical					Clinical				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
CRFS-S	75	12.36	5.56	12.37	.65	5	8.40	6.54	8.19	2.50
CRFS-O	75	21.77	9.10	21.82	.99	5	18.80	10.24	18.21	3.94

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 56

*CRFS: ANCOVA Comparing Children with Clinical and Non-Clinical CDI scores*

<i>Source of variance</i>	<i>Adjusted SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i><math>\eta^2</math></i>	<i>Adjusted R<sup>2</sup></i>
CRFS-Self							.03
CDI	81.74	1	81.74	2.62	<i>ns</i>	.033	
Covariates							
Age	30.30	1	30.30	.97	<i>ns</i>	.013	
Verbal IQ	49.10	1	49.10	1.57	<i>ns</i>	.020	
Error	2370.29	76	31.19				
CRFS-Other							.06
CDI	202.10	1	202.10	1.37	<i>ns</i>	.018	
Covariates							
Age	381.70	1	381.70	1.99	<i>ns</i>	.026	
Verbal IQ	751.39	1	751.39	3.87	*	.048	
Error	13355.28	76	175.73				

\**p* < .05 \*\**p* < .01 \*\*\**p* < .001***Descriptive Investigation of Cases with High and Low CRFS***

To examine whether or not there were children with both high reflective functioning and high levels of psychopathology, a further exploratory investigation was undertaken focusing on the 7 children with the highest CRFS scores, namely, scores on the extreme upper end of the normal distribution. Six of these 7 children had internalising difficulties in the clinical range on the CBCL, and 4 had externalising difficulties in the clinical range on the CBCL. None reported depressive symptoms in the clinical range on the CDI. Next, the seven children with reflective functioning scores at the extreme lower end of the distribution were selected and their CDI and CBCL scores were examined; three reported CDI symptoms in the clinical range, five had CBCL Internalising scores in the clinical range and four had CBCL Externalising scores in the clinical range. This pattern suggests that children reflective functioning scores at the extreme upper and

extreme lower ends of the distribution are more likely to display affective and behavioural difficulties.

### ***Attachment Security and Performance on the CRFS***

Finally, the impact of child attachment security on CRFS performance was investigated using ANCOVA to compare the performance of children classified as secure and insecure in terms of attachment on the CAI, after taking into account the effects of age and IQ. The dependent variable was CRFS performance, and the independent variable was security of attachment (secure or insecure). Two analyses were conducted, the first with CRFS-Self reflective functioning as the dependent variable and the second with CRFS-Other reflective functioning as the dependent variable. The covariates were age and IQ.

With respect to the CRFS-Self, the ANCOVA was significant,  $F(1, 72) = 12.89$ ,  $p < .001$ . As reflected in table 57, the means of CRFS-Self scores of insecure and secure children, adjusted for age and IQ, were ordered as expected, with insecurely attached children generally having lower Self reflective functioning scores ( $M = 15.23$ ) than securely attached children ( $M = 10.38$ ). The strength of the relationship between CRFS-Self and attachment was moderate, with attachment security accounting for 15.2% of the variance in children's Self reflective capacities (see Table 58).

With respect to the Other reflective functioning the ANCOVA was also significant,  $F(1, 72) = 11.82$ ,  $p < .001$  with insecurely attached children generally having lower scores ( $M = 18.82$ ) than securely attached children ( $M = 26.01$ ), after adjustment for age and verbal IQ (see Table 57). The strength of the relationship between CRFS-Other and attachment was moderate, with attachment security accounting for 14.1% of the variance in children's reflective functioning regarding relationships (see Table 58).

Table 57

### ***CRFS : Performance of Children with Secure or Insecure Attachment Classifications***

Scales	Secure					Insecure				
	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>	<i>n</i>	<i>Observed</i>	<i>SD</i>	<i>Adjusted</i>	<i>SE</i>
		<i>M</i>		<i>M</i>			<i>M</i>		<i>M</i>	
CRFS-S	24	15.46	6.11	15.23	1.11	52	10.27	5.00	10.38	.75
CRFS-O	24	26.83	9.85	26.01	1.75	52	18.54	7.68	18.82	1.18

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

Table 58

*CRFS: ANCOVA Comparing Securely Attached and Insecurely Attached Children*

<i>Source of variance</i>	<i>Adjusted SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i><math>\eta^2</math></i>	<i>Adjusted R<sup>2</sup></i>
CRFS-Self							.16
Secure/Insecure	373.25	1	373.25	12.89	***	.152	
Covariates							
Age	15.39	1	15.39	.53	ns	.007	
Verbal IQ	34.15	1	34.15	1.18	ns	.016	
Error	2084.16	72	28.95				
CRFS-Other							.19
Secure/Insecure	1887.13	1	1887.13	11.82	***	.141	
Covariates							
Age	236.84	1	236.84	1.32	ns	.018	
Verbal IQ	747.87	1	747.87	4.09	ns	.054	
Error	11689.22	72	162.35				

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ 

In order to further explore the nature of the relationship with attachment, the correlations between child reflective functioning and performance on the Emotional Openness and Emotional Coherence subscales of the CAI were investigated using Pearson correlations. Both Self reflective functioning and Other reflective functioning were found to correlate significantly with emotional coherence and emotional openness (see Table 59).

Table 59

*CRFS : Correlations with Child Attachment Subscales*

CAI Variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>CRFS-S</i> <i>r</i>	<i>CRFS-O</i> <i>r</i>
Emotion Openness	63	4.81	1.70	1.5	8.5	.53***	.61***
Coherence	63	3.94	1.69	1.0	7.5	.56***	.49***

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

*Relationship between Performance on the CRFS, the HSS and the AT*

In order to determine whether or not the construct of reflective functioning was related to the other constructs of socio-cognitive mentalisation that have been developed and investigated in this thesis, the relationships between performance on the CRFS scales, the HSS and AT were examined using Pearson correlations. The results, summarised in Table 60, indicate that, with the exception of the AT Impact scale, the correlations between these measures and the CRFS-Self and CRFS-Other were significant, showing relationships of moderate strength.

Table 60

*Relationship between Child Reflective Functioning (CRFS), Theory of Mind (HSS) and Affective Understanding (AT)*

Scales	1	2	3	4	5
1. HSS	-	.36**	.33**	.47***	.54***
2. CRF-Self		-	.59***	.30*	.40**
3. CRF-Other			-	.36**	.41**
4. AT Accuracy				-	.49***
5. AT Justification					-

\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

## **Discussion**

The aim of this study was to examine the psychometric properties of the CRFS, including its reliability and validity when used with the new manual and revised coding system. Interrater reliability, the internal consistency of the scales that were used, and the test-retest reliability of the CRFS were assessed. Validity was evaluated in the context of the relationships between performance on the CRFS and key demographic variables, intelligence, expressive language abilities, self-esteem, psychopathology, adaptation and attachment.

In the following section, the main findings are briefly summarised and then discussed.

### ***Reliability of the CRFS***

Overall, the findings indicate that the psychometric properties of the adapted CRFS coding system and manual are robust, and that the CRFS is an appropriate measure for assessing the ability of children aged 8 – 11 to consider themselves and significant relationships in mental state and interpersonal terms.

With regard to the appropriateness of the rating scale, children's reflective functioning, as evidenced by their responses to the questions that were coded, covered the full range of the scale ranging from –1 to 9; this confirms that this scale is appropriate for assessing the mentalisation abilities of children aged 8 – 11. At the same time, the item means were towards the bottom of the scale indicating that the majority of children in this age group still struggle to understand mental states and their interpersonal causes and impact (as evidenced in the examples they used to describe their own qualities and close relationships). Children tended to use physical, behavioural and categorical terms, or simple mental states, in portraying themselves and in describing particular events that illustrate their choice of self-descriptors. This was also the case in their descriptions of their close relationships and in their illustrations of particular interactions occurring between them and their parents. In general, they showed their highest reflective functioning when giving specific examples of what happens when their parents get upset or cross with them. This suggests that questions regarding what happens in conflict situations reflect children's potential or highest reflective functioning.

The findings confirm that the interrater reliability using the revised CRFS manual is good and that the manual can be used to train graduate level coders to rate child reflective functioning reliably and within an acceptable training period. In terms of test-



retest reliability, the findings reflect very good reliability over a 3-months test-retest interval and good stability over a 1-year period. These findings suggest that children's reflective functioning regarding themselves and their relationships with their parents is a relatively stable characteristic and that it is reliably assessed by the CRFS, even in a sample of children referred to mental health services because of emotional or behavioural difficulties. In line with theoretical expectations and the analysis of the dimensionality of the CRFS, two factors were identified, a self and other factor. Two scales were formed based on these results, CRFS-Self and CRFS-Other. Subsequent scale analyses confirmed that the CRFS-Self and CRFS-Other had good scale properties.

The distinction between self reflective functioning and reflective functioning regarding others and relationships is consistent with Fonagy and Target's (2003) argument that self reflective functioning develops in the context of attachment relationships, while reflective functioning regarding others is learned in a more cognitive way. The distinction between self and other reflective functioning is also consistent with the widely made distinction between self and other representations in attachment theory (Beebe et al., 1997).

### ***Relationships with Demographic Variables, IQ and Expressive Language Abilities***

***Demographic Variables.*** In line with expectations, no gender effects were evident with respect to the reflective functioning of boys and girls aged 8-11. This provides further evidence for the conclusion that the gender differences observed in abilities such as Reading the Mind in the Eyes (Baron-Cohen, 2000a) are less likely to be apparent in the assessment of cognitive-emotional abilities.

As expected, age was found to be a significant predictor of CRFS-Self and CRFS-Other scores, based on the findings of the regression analysis. It is worth noting that when a correlation analysis was used, no significant correlations between age and reflective functioning were found. The different methodology of the regression analysis contributed to slightly different results in that the contribution of age was considered in the context of other variables; the CAI and CAFAS inter-correlated with IQ, with age then predicting the residual of the variance in CRFS.

With regard to the relationship between CRFS scores and family composition, children living in single-parent families were found to have significantly higher self-reflective functioning scores than children in two-parent families. This was contrary to expectations, given previous findings showing that children were more likely to be insecurely attached if they lived in one-parent families (Greenberg et al., 1991; Shmeuli-Goetz, 2001). In addition, the findings indicated that children with "at-home" care-givers

had higher CRFS-Self scores than children with working caregivers. One possible explanation for these findings is that children with at-home caregivers, and children living in single-parent families, have more opportunities, or are under more pressure, to learn and develop the ability to consider themselves and their relationships with their mothers in mental state terms. This would be in line with other findings showing that opportunities to spend time with older siblings and especially adults are related to the development of children's emotional understanding and theory of mind abilities (Dunn, Brown, Slomkowski et al., 1991). In addition, it may be that single-parents, in the absence of another adult, demand more understanding from their children, and that this challenges and stimulates children to acquire reflective-functioning.

***IQ and Expressive Language Abilities.*** The findings showed significant positive correlations, and relationships of moderate strength, between expressive language abilities and CRFS-Self scores, as well as between IQ and CRFS-Other scores. The strength of the relationship between intelligence and reflective functioning is in line with the findings of a weak relationship between adult reflective functioning and IQ Fonagy et al. (1998). The findings are partially in line with expectations, given that relationships between child reflective functioning and both IQ and expressive language abilities were expected. On closer examination, it is evident that there are relationships of moderate strength between expressive language abilities and both scales, as well as between IQ and both scales, but as a result of the small sample size, the analysis lacked sufficient power for establishing the significance of these relationships. This suggests that caution is needed when drawing conclusion based on the particular patterns of significance reported with respect to IQ, expressive language abilities and CRFS-Self and CRFS-Other scores.

In terms of the construct validity of CRFS-Self and CRFS-Other, these findings of relationships of moderate strength confirm that reflective functioning as measured by the two scales, is a distinct ability and does not primarily reflect either verbal intelligence or expressive language abilities.

The findings of a relationship between reflective functioning and expressive language abilities is consistent with evidence showing that the quality of attachment and mother-child mental state talk are linked to the development of expressive language abilities (Trevvarthen, 1980); these same factors are also thought to contribute to the development of reflective functioning (Fonagy & Target, 2003). It is also consistent with the theoretical emphasis on narrative processes and parental discussions, referred to as coaching (Denham, 1998) and emotional didactics (Harris, 2000), as playing a pivotal role in the development of children's emotional understanding. These parent-child

emotion-focused narratives have been found to be a predictor of emotional understanding whether at 24 months, 33 months, or 6 years (Denham, Cook, & Zoller, 1992; Denham, Renwick-DeBardi et al., 1994; Dunn & Brown, 1994; Dunn, Brown, & Beardsall, 1991). Given the findings of J. G. De Villiers and J.A. De Villiers (1990) that language abilities were linked to the emergence of theory of mind during the pre-school period, it would seem likely that expressive language abilities may play a similarly important role in the development of and elaboration about the self. This is in line with the model proposed by Harris (2000) whereby rich and complex parental accounts of the emotional significance of events help children to organise events into narrative structures and, concomitantly, teach them this narrative skill. Harris suggests that the quality of parental elaborations and parental emphasis on emotions are important in the development of similar abilities in their children. This also fits with the emphasis Fonagy et al. (2002) and Fonagy and Target (2003) place on the parent's orientation towards the intentionality and internal processes of the child, an orientation which would conceivably be reflected in parent-child elaborations providing explanatory models of the reactions of the child and others. In this model, expressive language abilities may be an outcome and an indicator of the quality of parent-child discourse. Furthermore, with respect to reflective functioning, it can be argued that expressive language abilities are important building blocks of reflective functioning, and that they provide the scaffolding that facilitates its development.

As for the relationship between CRFS-Self scores and expressive language abilities, it can be seen as partial evidence of the role of expressive language and parent-child narrative processes in the construction, or perhaps more accurately, the co-construction of the self (Harris, 2000). As Harter (1983; 1999) has proposed, this process of construction can be seen as based on self-feeling (Cooley, 1902; Damasio, 1994), on what has been referred to in the theory of mind literature as a sense of agency or intentionality. It may well be that this sense of agency is supported by parental contingent processes, including parent-child discussions and elaborations, and that this facilitates the development of expressive language abilities, and that the latter abilities together with cognitive skills contribute to the development of children's reflective functioning.

### ***Attachment as Predictor of Performance on the CRFS***

The findings of the regression analysis were consistent with the hypothesis that attachment security would predict children's reflective functioning regarding themselves and their significant relationships. In addition to age, only attachment security made a

significant addition to the prediction of CRFS-Self and CRFS-Other scores.

As predicted, children's CRFS-Self and CRFS-Other scores showed significant associations with security of attachment, after adjusting for age and IQ (Fonagy et al., 2002). This provides support for the discriminant validity of the CRFS. It is also consistent with the argument that reflective functioning is closely linked to attachment (Fonagy, 1997), that attachment security in children fosters the development of mentalisation abilities, and that attachment security tends to be associated with the presence of parental factors likely to stimulate the development of mentalisation. The findings are also in line with the conclusions of Fonagy (1997), Meins et al. (1998) and H. Steele et al. (1999) that the development of children's ability to think in terms of their own or others' mental states is inextricably linked to attachment. Another possible explanation for this study finding is Fonagy's (1997) hypothesis that securely attached children develop superior theory of mind abilities because they benefit more from pretend play and parent-child discussions involving mental states, and because they feel at liberty to explore another person's mind. At the same time, it is likely that, as suggested by Fonagy, M. Steele, H. Steele, Higgit and Target (1994), that mothers who relate to their children in ways which foster secure attachments, are good at the types of interactions, such as engaging in pretend play with their toddlers and engaging in conversations rich in mental state talk, which have been identified by Dunn's research as important predictors of the development of children's mentalisation abilities. It has been hypothesised that the mother's "mind-mindedness" (Meins, 1997), or reflective functioning (Fonagy & Target, 2003), predicts both children's attachment security and mentalisation abilities (Fonagy, H. Steele, Moran et al., 1991; Slade et al., 1999). The mother's perception of the child as mentalising, whereby she attributes intentionality to the infant, and the mother's ability to mentalise and think accurately about the infant's internal states are considered to be the most important factors in the development of secure attachment. These qualities are similar to the maternal qualities Dunn has identified as facilitating mental state understanding. Considered together with the earlier findings, of the present study showing of a relationship between attachment security and children's mentalisation abilities, fit well with the theoretical models and empirical evidence of a close developmental relationship between attachment and mentalisation.

Psychopathology and social adaptation did not make a significant contribution to the prediction of children's reflective functioning on other the CRFS-Other or CRFS-Self scale.

### *Clinical Levels of Psychopathology and Performance on the CRFS*

After considering the effects of age and IQ, no significant correlations were found between psychopathology and child reflective functioning, neither when using regression analyses nor when comparing children with clinical and non-clinical levels of psychopathology (as measured on the CBCL or CDI).

Initial comparisons indicated that with regard to psychopathology, children who reported a level of depressive symptomatology on the CDI above the 70<sup>th</sup> percentile, which is considered as indicative of warranting clinical referral and treatment, in general had lower CRFS-Other scores when compared with peers with less severe problems. Similarly, children who had behavioural and emotional difficulties in the clinical range based on CBCL scales, also had lower CRFS-Other scores when compared with peers with less severe problems. However, these differences appeared to be mainly associated to verbal intelligence and did not remain significant once this was adjusted for. Rather than interpreting these results as suggesting that verbal abilities are more important than reflective functioning in the context of psychopathology, it can be argued that verbal abilities are principally important because they enable children to be reflective about their circumstances and emotional reactions. No differences in CRFS-Self scores were observed when clinical and non-clinical groups were compared.

Another factor which may have contributed to the lack of significant findings with regard to psychopathology and reflective functioning is the fact that a small group of approximately 10% of cases had high reflective functioning scores at the upper end of the normal distribution, and 6 of these 7 children had internalising or externalising problems in the clinical range based on parent-reports on the CBCL. This group of children present an interesting challenge to the present theory of reflective functioning, given that one of the assumptions is that high reflective functioning is a protective factor with regard to psychopathology. One possible explanation for the findings from the present study is that it is possible to have a theory of agonised or twisted minds. This explanation is in line with the cognitive models of depression and conduct disorder where negative or distorted attributional systems are emphasised (Dodge et al., 1997). It may be that children develop a type of distorted hyper reflectiveness in the context of challenging family circumstances, or in the context of relating to disturbed parents. These contextual factors would need to be taken into account in examining whether reflective functioning provides some protection with regard to psychopathology either concurrently, or longitudinally.

### ***Convergent and Concurrent Validity of the CRFS***

As hypothesised, significant correlations showing relationships of moderate strength were found between child reflective functioning (as measured on the CRFS) and theory of mind (as measured by the HSS), as well as with affective understanding (as measured on the AT Accuracy and Justification scale). In the absence of a “gold standard” against which tests of children’s mentalisation abilities can be measured to verify their validity, this evaluation of children’s performance on the CRFS in relation to their performance on the HSS and the CRFS, provides a good indication of the concurrent validity of the CRFS scales. The findings indicate that the convergent validity of the construct of socio-cognitive mentalisation as measured by the HSS, AT and CRFS was moderate, as would be expected of related constructs of this nature.

In addition, the significant correlations showing relationships of moderate strength between children’s reflective functioning and their performance on the Emotional Openness and Coherence subscales of the CAI provide further support for the concurrent, convergent validity of the CRFS scales in relation to these closely related constructs from an attachment perspective.

### ***Future Considerations***

The present study has demonstrated that child reflective functioning can be assessed reliably in children aged 8 to 11, and that it is a construct distinct from intelligence. Now that the psychometric properties of the CRFS have been established, it is possible to examine empirically: 1) Fonagy and Target’s thesis regarding the impact of abuse on the development of self reflective capacity; 2) the relationship between reflective functioning and psychopathology with a sample selected especially for this purpose; 3) the development of reflective functioning over time; 4) the question as to why some children have high reflective functioning but also show definite signs and symptoms of behaviour and emotional difficulties.

### ***Conclusion***

In sum, the study results confirm that 1) the psychometric properties of the CRFS, including the interrater reliability and the test-retest reliability of the scale, are robust; 2) the CRFS is comprised of two factors, self reflective functioning and other reflective functioning; 3) used as subscales, both CRFS-Self and CRFS-Other, had good internal consistency; 4) the CRFS is appropriate for measuring reflective functioning of children aged 8 – 11; 4) children’s reflective functioning as measured by the CRFS was predicted

by age and attachment, and not by intelligence; 6) there were significant differences in children's reflective functioning depending on their security of attachment; 7) children with unusually high reflective functioning also appear to be more likely to have affective and behavioural difficulties; and 8) child reflective functioning showed a significant moderate correlation with performance on other scales of socio-cognitive abilities such as the HSS and the AT.

These findings confirm both that it is possible to assess reflective functioning reliably in relatively young children and that reflective functioning is an ability closely linked to attachment.

## **CHAPTER 7**

### **GENERAL DISCUSSION, CONCLUSIONS AND FUTURE DIRECTIONS**

In order to address the problem of the paucity of measures with established psychometric properties for assessing the mentalisation abilities of primary school-aged children, this thesis presented three such measures and their coding manuals and investigated whether or not they provide reliable and valid assessments of children's theory of mind, affective understanding and reflective functioning.

The aims of the study were two-fold. The first aim was to determine the psychometric properties of three instruments, the HSS, AT and CRFS, developed to assess mentalisation in primary school-aged children from the related perspectives of theory of mind, affective understanding and reflective functioning, and to investigate the interrater reliability, test-retest reliability, scale properties and internal consistency of these instruments. The second aim was to examine the relationship between performance on each of the three measures and key demographic variables, intelligence, psychopathology, adaptation and attachment. The question here was whether or not children's mentalisation abilities could be shown to be sufficiently distinct from intelligence, and whether or not these abilities could be shown to be related to other pertinent developmental issues, such as psychopathology and attachment security.

Reviews of the relevant literature and empirical research pertaining to children's theory of mind, affective understanding, attachment and reflective functioning were presented, providing a background to the three empirical studies which focused on the HSS, AT and CRFS respectively. In this final chapter, the principal findings related to the HSS, AT and CRFS will be summarised. The discussion will address the following questions: Do these results show conclusively that the HSS, AT and CRFS provide reliable and valid methods for the evaluation of children's mentalisation abilities? The overall pattern of results will also be considered with respect to the relationship between children's mentalisation abilities (from the perspective as theory of mind, affective understanding and reflective functioning) and intelligence, child psychopathology, adaptation and attachment. At the same time, new findings and their theoretical implications will be considered. Finally, the limitations of the present research will be discussed, and directions for future research will be presented.



## **Summary of Findings**

For the sake of convenience, the main results are summarised in Appendix E1.

### ***Reliability of the HSS, AT and CRFS***

The first step in the process of evaluating the psychometric properties of the HSS, the AT and the CRFS involved demonstrating that their performance with respect to reliability was satisfactory. The three standard indexes of reliability were thus evaluated, namely, interrater reliability, internal consistency and test-retest reliability.

#### ***Interrater Reliability***

The interrater reliability of the HSS and CRFS was demonstrated to be good, and that of the AF scales, fair to good. This confirms that the coding systems and three coding manuals developed as part of the work undertaken for this thesis can be used to train undergraduate and graduate coders to rate primary school-aged children's theory of mind, affective understanding, and reflective functioning at an acceptable level of reliability, after a reasonable training period.

#### ***Scale Analysis and Internal Consistency***

Analyses of the scale properties indicated that all three measures had good internal consistency. In line with theoretical expectations, the findings showed that the CRFS is composed of two factors, namely, self- and other reflective functioning. Two scales were thus computed, a CRFS-Self scale and a CRFS-Other scales, and their internal consistency reliability has been demonstrated to be good. The findings also indicated that the AT was composed of an affect attribution and explanation factor and a complex affective understanding factor. This indicates that AT data can be analysed using either the factors or the individual scales. The latter approach was used in this thesis, given that there was no previous data available regarding the relationships between the dimensions of affective understanding measured by the different scales and children's intelligence, psychopathology, adaptation and attachment.

#### ***Test-Retest Reliability***

The stability of children's mentalisation abilities as measured by the HSS, AT and CRFS were examined over a 3-month test-retest interval, as well as over a 1-year period. Children's theory of mind abilities as measured by the HSS showed moderate stability over a 1-year period, but the findings did not reflect adequate stability over a shorter period, probably because children are reluctant to re-engage in a task of this nature after a relatively short interval. Children's affective understanding as measured by the AT

Accuracy and Justification scales showed low, moderate stability over a 3-month test-retest interval. Based on the poor test-retest results of the other AT scales (Internal/External, Impact and Challenge), these scales were excluded from further analyses.

Children's reflective functioning with regard to themselves and their close relationships (as measured on both CRFS-Self and for CRFS-Other scales) showed moderate to good reliability over a 3-month period, as well as over a 1-year period. This indicates that reflective functioning is a relatively stable characteristic of children. This evidence of the stability of children's reflective functioning (as measured on the CRFS) is even more impressive considering the inevitable contribution of interrater error and the fact that the findings were obtained in a sample of children recruited from referrals to child and adolescent mental health clinics.

In summary, the study results confirmed that the interrater reliability, as well as the internal consistency of the three measures, was promising. The test-retest reliability of the CRFS was good, and the findings showed tolerable test-retest reliability for the HSS and the AT. When the assessments with respect to the different dimensions of reliability are taken together, they confirm that the HSS, the AT and the CRFS are reliable measures of children's theory of mind abilities, affective understanding and reflective functioning.

### *Validity of the HSS, AT and CRFS*

Next, the validity of the different measures of children's mentalisation was considered. The first question asked concerned the validity of the construct of mentalisation as operationalised by the HSS, AT and CRFS, i.e., can children's performance on these measures be shown to be sufficiently distinct from intelligence and expressive language abilities? The second question concerned the role of psychopathology, adaptation and attachment added to the prediction of children's mentalisation abilities (over and above age and IQ). The third question concerned whether or not children's mentalisation abilities, as measured by the HSS, AT and CRFS, discriminated between securely and insecurely attached children and also between children with symptoms of psychopathology in the clinical ranges on the CBCL and CDI and other children. The fourth question concerned the convergent validity of the different measures of primary school-aged children's mentalisation abilities, as assessed by the HSS, AT and CRFS.

### ***Age and Gender Effects***

Primary school aged boys and girls were not found to differ with regard to their mentalisation abilities as evaluated in this study, and this was consistently the case regardless of the assessment measure used.

With respect to age, the study results indicated that theory of mind abilities (as measured by the HSS) and affective understanding (as measured on the AT scales) increased significantly between aged 5 and 11. Age effects with respect to reflective functioning on the CRFS-Self and CRFS-Other scale were also revealed in the regression analyses using a larger sample.

### ***Family Composition and Mentalisation Abilities***

In summary, the findings with respect to family factors and primary school-aged children's mentalisation abilities reveal an interesting picture. They suggest that the presence of siblings, growing up in single-parent households, and having stay-at-home mothers all stimulate the development of different mentalisation abilities. The presence of siblings appears to stimulate the development of the ability to provide explanations of affective reactions in particular interpersonal contexts, while living in single parent-families is associated with a more advanced ability to interpret non-literal communication. Furthermore, children living in single-parent families and children with stay-at-home mothers who were not formally employed seemed to have at a relative advantage in terms of their ability to provide descriptions of themselves in mental state terms. This would seem to support the conclusions that there are different routes to different aspects of emotional understanding (Dunn, 1988; Denham, 1998; Saarni, 1999); in other words, there may be different factors which stimulate the development of specific dimensions of affective understanding.

### ***Intelligence and Expressive Language Abilities***

The question of construct validity was addressed next, following Kline's guidelines (2000). The aim was to determine if children's theory of mind, affective understanding and reflective functioning can be considered as abilities that are sufficiently distinct from intelligence and expressive language so as to be considered constructs in their own right. In this respect, performance on the three measures was expected to be related to intelligence and verbal expressive abilities, with moderate strength correlations of not higher than  $r = .5$ . The results confirm that the constructs of theory of mind, affective understanding and reflective functioning as measured by the HSS, AT and CRFS are distinct from, although related to, verbal intelligence and expressive language abilities.

The findings also show significant correlations between children's expressive language abilities and performance on the HSS and the CRFS-Self scale.

### ***Psychopathology as Predictor of Performance on the HSS, AT and CRFS***

Child-reports of depressive symptoms and trait anxiety added to the prediction of their theory of mind (as measured by the HSS), in addition to age and IQ. Child-reports of depressive symptoms also added to the prediction of children's abilities to provide narrative justifications of why certain affect were evoked by particular situations (as measured by the AT Justification scale). Parent-reports of children's social adaptation predicted children's knowledge of affects evoked in particular context (as measured by the AT Accuracy Scale), in addition to age and IQ. No significant relationships were found between psychopathology and child reflective functioning, but it should be noted that the small sample reduced the capacity to detect weak relationships.

### ***Psychopathology and Performance on the HSS, AT and CRFS***

The findings of both correlation analyses and regression analyses are relevant here. In retrospect, the strategy used in the regression analyses, of considering what contributions psychopathology makes in addition to intelligence to the prediction of children's mentalisation abilities, can be argued to have been overly conservative. For this reason the results of the correlation analyses will first be considered.

The findings based on the correlation analyses indicate that child-reports of depressive symptoms on the CDI account for 10% of the variance in children's ability to understand the intentions of others as reflected in everyday speech (as measured by the HSS), and 12% of the variance in their understanding of which affects were likely to follow particular interpersonal situations. Children's reports of depressive symptoms also accounted for 6% of the variance in self-reflective-functioning (measured on the CRFS-Self scale), 4% of the variance in reflective functioning regarding others (measured on the CRFS-Other scale) and 5% of the variance in their understanding of the causes linking affect to situations (measured on the AT Justification scale). Regression analyses indicated that, in addition to age and intelligence, child-reports of symptoms of both depression and anxiety made significant contributions to the prediction of their ability to understand the intentions of others as reflected in everyday speech (measured by the HSS), individually accounting for 5% of the variance in performance on the HSS. Similarly, in addition to age and IQ, child-reports of symptoms of depression accounts for 8% of the variance on the AT Accuracy scale, which measures children's understanding of the affects likely to result from particular interpersonal situations. In addition, the findings showed that after adjusting for age and IQ, depressed children were less able to

provide justifications of affects evoked elicited by particular interpersonal situations (measured on the AT Justification scale).

Compared to the relationships between children's reports affective symptoms and their mentalisation abilities, the relationships between children's behavioural difficulties (based on parent-reports on the CBCL Externalising scale) and their mentalisation abilities were comparatively weaker. Behavioural difficulties accounted for 6% to 7% of the variance in children's theory of mind abilities (measured on the HSS) and their understanding of which affects are likely to be evoked by particular situations (measured on the AT Accuracy scale).

The relationship between children's reflective functioning and psychopathology was examined further to determine whether or not there was evidence supporting the theoretical postulate that high reflective functioning is associated with better psychosocial adjustment. The seven children with reflective functioning scores at the extreme upper end of the distribution were selected and their CDI and CBCL scores were examined. Six of these seven children had CBCL Internalising scores in the clinical range and three had CBCL Externalising scores in the clinical range. Next, the seven children with reflective functioning scores at the extreme lower end of the distribution were selected and their CDI and CBCL scores were examined; three reported CDI symptoms in the clinical range, five had CBCL Internalising scores in the clinical range and four had CBCL Externalising scores in the clinical range. This pattern suggests that children reflective functioning scores at the extreme upper and extreme lower ends of the distribution are more likely to display affective and behavioural difficulties.

Parental reports of children's adaptive functioning (measured on the CAFAS) accounted for 10% of the variance in children's performance on the AT Accuracy scale, 6% of the variance in self-reflective-functioning (measured on the CRFS-Self scale) and 7% of the variance in other-reflective-functioning (measured on the CRFS-Other scale). Furthermore, the findings of the regression analysis indicate that over and above age and intelligence, children's adaptive functioning explained an additional 6% of the variance in their understanding of which affects are likely to follow on particular situations (measured on the AT Accuracy scale).

### ***Attachment Security and Theory of Mind***

As predicted, the findings of the three studies reflect a consistent pattern of associations between attachment security and primary school-aged children's mentalisation abilities as measured on the HSS, AT and CRFS. This provides empirical support for the postulate that children's mentalisation abilities are linked to attachment.

Securely attached children, when compared with insecurely attached children of the same age and IQ, performed significantly better on the HSS. This suggests that security of attachment is associated with a greater ability to interpret the intentions of others and use this to understand what people really mean when they say something. Significant differences were also found in performance on the AT Justification scale, indicating that securely attached children were significantly more able to provide plausible explanations linking affective reactions and contexts, compared with insecure children of the same age and IQ. In addition, the self-reflective-functioning and other-reflective-functioning of securely attached children were found to be significantly higher than those of insecurely attached children.

### ***Relationship between Performance on the HSS, AT and CRFS***

Significant positive correlations of medium strength were found between children's theory of mind abilities (measured on the HSS), affective understanding (measured on the AT), and reflective functioning (measured on the CRFS). These findings confirmed the convergent validity of the HSS, AT and CRFS as measures of the construct of mentalisation.

### **New Findings and Theoretical Implications**

When the findings of this study are considered together, they suggest that the propensity and ability of primary school-aged children to mentalise and think about the feelings and thoughts of others contribute to psychopathology and adaptive functioning.

### ***Assessing the Theory of Mind, Affective Understanding and Reflective Functioning of Primary School-Aged Children***

The psychometric properties of the HSS, AT and CRFS presented in this thesis provide strong and convincing evidence that it is possible to obtain reliable and valid assessments of children's mentalisation abilities using the coding systems and manuals presented here.

### ***Age, Gender and Family Factors***

The lack of gender differences in the mentalisation abilities of the primary school-aged children identified in this study are in line with Saarni's (1999) conclusions. This finding is corroborated by other evidence that girls and boys do not differ when it comes to the ability to understand affect per se (Gross & Baliff, 1991; Strayer, 1989; Thompson 1989). The findings of this study can be seen as providing additional evidence that there are no differences in the socio-cognitive abilities of boys and girls to understand affects,

intentional communication and relationships. In this context, the common characterisations of girls as folk-psychologists and boys as folk-physicists (Baron-Cohen & Hammer, 1997; Baron-Cohen 2000a) can thus be seen as reflecting differences in motivation and specific areas of emotional competence, such as what Baron-Cohen (1997, 2001) has referred to as mindreading abilities, rather than differences in affective understanding *per se*.

With regard to age, the study findings confirm that the HSS is age-sensitive when used with primary school-aged children and indicate that theory of mind continues to increase in complexity during the period from age 5 to 11. This demonstrates that when theory of mind tests are at the appropriate level of difficulty for the age group under study, there is no evidence that theory of mind abilities reach a sudden plateau at the end of the pre-school years. In light of these findings, it seems clear that, as Baron-Cohen (2000b) argues, it was incorrect to conclude that theory of mind abilities are established by the end of the pre-school period due to the inappropriate use of first and second order theory of mind tests that were not sufficiently complex for use with older children. Part of the problem has been that it is much more challenging to construct appropriate tests of more complex socio-cognitive abilities. The findings of the present study confirm that Happé's (1994) solution (testing theory of mind by assessing the ability to interpret examples of everyday speech and to understand the intentions of the speaker) presents an appropriate and ingenious response to this problem. It is remarkable that this test, theorised to reflect the theory of mind abilities of children aged 8 to 9 (Happé, 1994; Baron-Cohen et al., 1997), was never, in fact, used with primary school-aged children. The results of this study confirm that theory of mind abilities continue to develop during the primary school years in a way that can be measured reliably, they suggest that it is possible to use the construct of theory of mind productively in further research with primary school-aged children. Given these findings and Baron-Cohen's (2001) recent work on children's ability to read the mind or mental states of others in their eyes and surrounding areas, it would seem that the time is right to accept the challenge and continue mapping the developmental path of children's theory of mind abilities, this time with the focus on the primary school and adolescent years.

The present study has also provided evidence that during the primary school years, children's understanding of the affective reactions of others in interpersonal contexts, becomes increasingly complex and interpersonal. These findings elaborate upon earlier findings showing that these abilities emerge at around age 8 (Harter & Whitesell, 1989; Strayer, 1986; Wintre & Vallance, 1994). This study provides the first evidence of

children's reflective functioning and indicates that reflective functioning, in contrast with theory of mind and affective understanding, is an ability which begins to emerge only during the primary school years, it can thus be regarded a relatively late developmental acquisition. This is in line with theoretical supposition that reflective functioning is a complex ability and is never fully established, even after arriving at adulthood (Fonagy & Target, 2003). From a reflective functioning perspective, theory of mind abilities and affective understanding could well be viewed as developmental precursors of reflective functioning abilities, with the latter involving relatively more complex abilities. These abilities are required to comprehend the emotional significance of interpersonal processes and also the impact of emotions, expectations and beliefs on interpersonal processes.

The study findings also provide new and interesting evidence showing that the development of children's mentalisation is associated with particular family factors, and can be seen as support for the model postulating that this ability develops in the context of processes within the family, rather than being primarily biologically and maturationally driven. The findings suggest that during the primary school years, the presence of siblings, with some exceptions, no longer impacts in a general way on the development of mentalisation abilities as measured by the HSS, AT and CRFS. This is not entirely surprising, given that the presence of schoolmates and peers provides opportunities for play and social-emotional learning and may help only children to catch up with children with siblings who had more such opportunities during the pre-school years. At the same time, the finding that primary school children with siblings were significantly better than only children at providing narrative explanations of why certain emotions will be evoked in particular interpersonal contexts, as measured by the AT Justification scale, provides evidence of how sensitive these abilities are to family factors and to opportunities to learn and practice. The findings indicate that children with siblings have a better command of the narratives explaining the links between interpersonal contexts and the emotional reactions evoked in these contexts. Harris (2000) has hypothesised that children learn these narratives through hearing parents and others repeat and elaborate their discussions of events that evoked emotional reactions. When this line of reasoning is applied to the current findings, it suggests that children with siblings have more opportunities to learn these narratives not only directly via interactions with their siblings, but also indirectly via observation of their parents interacting with their siblings. The fact that the presence of siblings does not have the same impact on theory of mind and reflective functioning abilities as on the ability to identify affects accurately suggests that there are different developmental pathways to the different dimensions of mentalisation.



In addition, the findings showed an unexpected association between family composition and the mentalisation abilities of the primary school-aged children in this sample. Contrary to expectation, children living in single-parent families, compared with children from two-parent families showed significantly better theory of mind understanding on the HSS, and better self reflective functioning on the CRFS-Self scale. These results were unexpected, as living in single-parent families has frequently been found to be associated with increased risk and negative impact on child development, especially when associated with poverty (Luthar, 1999). In addition, children with caregivers who were not formally employed also had significantly higher self reflective functioning than children with working caregivers. These findings require replication and further investigation in order to elucidate the mediators accounting for this association. A possible explanation is that in the absence of a co-parent or adult partner, single mothers demand more from children in terms of their understanding of adult communication that is non-literal, and that this stimulates the development of children's ability to understand this type of communication.

The finding that children with mothers who were not formally employed, and who were described as homemakers, had significantly higher self reflective functioning on the CRFS-Self scale is also challenging to account for as there is no existing data specifically related to the impact of interactions with parents on the development of children's self-awareness during the primary school years. A possible explanation is that children have more opportunities for interaction and conversations with stay-at-home mothers. It may be that these interactions in close relationships provide children with more personal feedback and thus facilitate the elaboration of their self representation. Given Youngblade and Dunn's (1995) conclusion that access to older people and older siblings contributes to the development of affective understanding, there is reason to believe that not only the quality, but also the quantity, of interactions are important. As Harris (2000) has theorised, opportunities to express and converse with parents, especially about emotional reactions, help children to work out the psychological significance of situations, and to encode the material in a coherent way, and to develop coherent narratives. The same argument can be expected to apply to the development of self reflective functioning and to the development of a concept of self. One explanation of the findings is that mothers who do not have formal employment may spend more time interacting with their children, and this may in turn contribute, via the processes described above, to the development and elaboration of self representations and narratives regarding the self. An alternative explanation is that mothers who do not have formal employment have made a particular

choice to be “home-makers” and that this reflects an orientation towards family and children which can be expected to be associated with the maternal characteristics and child-focused behaviours that facilitate children’s self development and self-awareness.

### ***Psychopathology and Children’s Mentalisation Abilities***

The findings of the present study reflect an interesting relationship between children’s mentalisation abilities and psychopathology; they suggest that when theory of mind tests are used which are appropriately pitched to the age group under study, it is possible to observe sufficient variability in children’s mentalisation abilities so as to identify links with psychopathology. At the same time, the findings from this study suggest that intelligence accounts for much of the variance shared by psychopathology and children’s mentalisation abilities, a fact that has been largely overlooked in previous studies of psychopathology and children’s mentalisation abilities. It may be argued that intelligence is important primarily because it facilitates socio-cognitive abilities, and that we should simply focus on the relationship between the latter and psychopathology. At the same time, approaches that ignore the role of intelligence may contribute to an overestimation of the role of socio-cognitive abilities. Even more seriously, this may lead to the simplistic conclusion that programs to facilitate affective understanding are likely to ameliorate behavioural and other difficulties, without considering the role of factors such as intelligence, and the implications this may have for intervention strategies. More specifically, the question arises as to how children with lower verbal intelligence learn, which raises the related question concerning the effectiveness of using language based interventions.

The findings reflect relationships of medium and low strength between children’s mentalisation abilities (as assessed on the measures used in this study) and child-reports of depressive symptoms. In addition to age and IQ, child-reports of symptoms of both depression and anxiety predicted children’s theory of mind abilities (their capacity to understand the intentions of others as reflected in everyday speech) as well their affective understanding (understanding which affects are likely to follow on particular interpersonal situations). At this point, we have to be content with speculating about causality and pathways, given that symptomatology and theory of mind were concurrently assessed, and that data was not collected regarding other risk factors for childhood depression and anxiety.

There are a number of possible explanations that are not mutually exclusive. It is quite conceivable that when children have difficulties understanding the intentions of others in everyday exchanges, they are less popular and effective in the social world and

that this in turn contributes to feelings of rejection, depression and anxiety. Deficits in theory of mind may also make it more difficult for children to recover from adverse family circumstances or abusive parental relationships, as Fonagy and Target (2003) suggest. Another, not incompatible, explanation is that developmental factors known or hypothesised to be implicated in the development of theory of mind overlap with risk factors for childhood depression and anxiety. This is illustrated by previous findings that mothers with anxiety disorder, known to be a risk factor for childhood depression, are less able to recognise and respond to the intentional acts of their children (Feldman & Reznick, 1996). Explanations focused on intentionality alone are inevitably simplistic, given that multiple risk factors involving the level of the child, parent and context are known to be implicated in childhood depression. It also seems inadequate to explain the impact of, for example, profound parental hostility or parental depression on children's emotional development, in these terms.

The findings also indicate that depressed children are less able to provide narrative justifications of specific affects are elicited by different situations. There is relatively little research explicitly addressing the relationship between depression and affective understanding. One possible explanation of the association between affective understanding and depression is that the same adverse family factors, child and parent factors contribute to both low affective understanding and depression, but that, subsequently, lowered affective understanding contributes to maintaining depression. Another possibility is that the lower scores reflect decreased motivation and anhedonia, or impaired thinking due to anxiety. It may be that the lower performance on these scales is a temporary phenomenon associated with a depressive episode, rather than a characteristic of the child. This hypothesis would need to be excluded by testing the same children after the depression has resolved.

With regard to adaptive functioning, the findings indicate that there was a weak to moderate relationship between parental reports of children's adaptive functioning and: 1) children's understanding of the affects likely to be evoked in particular contexts, and; 2) their reflective functioning. These findings provide further evidence in support of the theoretical conclusions that children's mentalisation abilities are associated with adaptive functioning. The ability to identify affects following upon common emotion evoking circumstances was found to be related to adult reports of behavioural difficulties. This suggests that children who have not mastered the basic tools for thinking about affective and interpersonal situations are at increased risk of difficulties in the key domains of adaptation. The finding with regard to the link between social adaptation and affective

understanding are in line with the growing body of evidence that affective understanding contributes to social competence and predicts peer status (Denham, 1998; Walden, et al., 1992). Affective understanding is also thought to be associated with the more frequent use of emotion state language (Denham, 1989), and this can be seen as helping children to regulate and influence interpersonal relationships and the emotional states of others through teasing, negotiation, requesting and joking (Dunn, Brown & Beardsall, 1991). It may also be that the same family, parental and child factors which facilitate affective understanding are associated with other skills that facilitate adaptive functioning and emotional adaptation, such as affect regulation, emotional expressiveness, executive and impulse control, lack of negative affectivity, empathy and a general pro-social attitude.

After considering the effects of children's age and attachment security, psychopathology and social adaptation did not add significantly to the prediction of performance on the CRFS. Further exploration of these findings revealed that in this sample of children referred to mental health clinics, some children with high reflective functioning also had high levels of affective and behavioural difficulties, suggesting that what can be referred to as hyper reflectiveness is not a sign of mental health in children. These findings suggest that it is possible to have a highly elaborated type of reflective functioning which is morbid or twisted. It remains to be determined whether this high, but disturbed, reflective functioning is the result of trying to deal intellectually with very difficult life situations or the result of internalised distorted narratives or disturbed mind-mindedness on the part of parents, as for example in the case of children who grow up with mothers with borderline personality disorder. At the same time, this finding that children with high reflective functioning also had behavioural difficulties, is more difficult to integrate into the theoretical model that sees the quality of affective understanding as the product of the same developmental processes considered to establish affect regulation. The identification of children with high reflective functioning and high levels of interpersonal aggression would be even more challenging to integrate into the theoretical model of reflective functioning. The results of this study suggest that children with exceptionally high reflective functioning may also have behaviour problems. This requires further exploration investigation in order to assess the context and the type of behaviour difficulties, as oppositional behaviour towards parents is much easier to accommodate at a theoretical level than violence towards others.

***Behavioural Difficulties.*** The findings of this study indicate that there were weak inverse relationships between children's behavioural difficulties and: 1) their theory of mind abilities as measured by the Happé, and 2) their understanding of the affects likely

to be evoked by particular situations as measured on the AT Accuracy scale. However, behavioural difficulties did not make significant contribution to the prediction of children's mentalisation abilities, in addition to age and IQ.

The findings are in line with previous research showing an inverse relationship between antisocial behaviour and emotional understanding (Miller and Eisenberg, 1988) and with the finding that children with conduct disorder had significant deficits in emotional understanding as assessed by the Kusche Affective Interview (Kusche et al., 1988). Despite the lack of significant findings reported by Happé and U. Frith (1996) with regard to theory of mind and conduct disorder, the findings of the present study indicate that when tests of appropriate difficulty are used, such as the HSS, relationships between theory of mind and behavioural difficulties can be detected.

At the same time, the relationship between behavioural difficulties and theory of mind and affective understanding is weak, with children's socio-cognitive abilities accounting for no more than 7% of the variance in children's behavioural difficulties. This indicates that other factors account for the largest proportion of the variance in behaviour problems. As hypothesised by Klin et al. (2000), social competence involves multiple skills, both primitive and sophisticated, which have to act synergistically and which include the ability to process rapidly-shifting facial expressions, voice inflections and posture at an automatic, immediate and intuitive level. It may thus be that methods used to assess affective understanding skills in laboratory situations reflect a gross underestimation of the skills demanded by real-life emotional and social interactions, such as when children are teased and provoked by peers and there is the potential threat of humiliation. Another explanation, as suggested by LeDoux (1996), is that there are both a fast and dirty route to processing emotions, and a slower more reflective route. It is possible that the former is more relevant than the latter when it comes to behaviour problems, but that it is the reflective route that is assessed by the instruments presented here. As suggested by the research of Denham (1998) and Henshaw and Melnick (1995), the fast and dirty route proposed by LeDoux, may be more influenced by factors such as temperament and impulsivity, emotional intensity, aggressivity and negativity.

The findings of Dodge et al. (1984) that unpopular children tend to display negative attributional biases whereby they misinterpret prosocial intentions as being negative may be relevant to the present study. This may be because of early exposure to trauma and environments which promote anger, fear and hyperactivity (Dodge et al., 1997) or because of positive aggressive role models (Dodge, 1991). It could be that some children with behavioural difficulties have good mentalisation abilities and are able to use

these when in neutral experimental situations, but that their appraisal of intentions is disturbed. Thus, their interpretation of interpersonal intentions becomes negatively coloured by harsh family environments. Experiences of neglect or abuse by parents may have left these children with a relational schema in which aggressive relationships are the order of the day. There is also the possibility that attachment disorganisation accounts for why some children have good theory of mind, affective understanding and reflective functioning but decompensate in interpersonal contexts, becoming aggressive and violent when, for example, they feel rejected, humiliated or threatened. As suggested by Fonagy and Target (2003), it may be possible to acquire a superficial understanding of others using intellectual abilities, despite a self structure that is severely compromised.

Another hypothesis is that some children have the ability to understand the feelings and intentions of other, but, as suggested by Blair (1995), they lack empathic abilities, or have a theory of bad minds where they take pleasure in hurting others, as suggested by Arsenio and Fleiss (1996) and Happé and U. Frith (1996). Rather than having the pro-social goals that are commonly assumed to be associated with the ability to understand the affects and mental states of others, these children may have different goals and thus take pleasure in the distress of others. Richters and Cicchetti (1993) have suggested that in disenfranchised communities where violence is common there may be deviant pathways to social acceptance where aggression and brutality is glorified and admire. In these contexts, affective understanding may include different rules and attitudes toward violence and aggression than in mainstream culture, and children may use a complex set of double standards whereby affective understanding is used in certain contexts and suppressed in others.

In sum, the implications are that impulse control problem, negative appraisal, a theory of bad minds or a lack of empathy are at the root of the behavioural difficulties of these children.

### ***Mentalisation, Intelligence and Expressive Language Abilities***

The findings of this study demonstrate that when children's theory of mind, affective understanding and reflective functioning are evaluated using the interview-based assessment methodologies presented here, children's mentalisation emerges as an ability in its own right not unduly determined by intelligence and expressive language abilities. The findings indicate that, as expected, intelligence and expressive language abilities contribute to children's theory of mind, affective understanding and reflective functioning. At the same time, the study findings put to rest the empirically based concerns that socio-cognitive abilities reflect little more than intelligence. It provides

additional weight to the small, but growing body of research, such as that of Jones and Day (1997), Lee et al. (2000), as well as Wong et al. (1995), indicating that it is possible to distinguish social intelligence from academic intelligence. It is thus of note that verbal intelligence accounted for 24% of variance in children's theory of mind abilities (as assessed by the HSS) and 16% of the accuracy in their knowledge of which affects follow certain situations (on the AT Accuracy scale), but a much smaller percentage of the variance of more complex mentalisation abilities. Intelligence accounted for at the most 7% of the variance in children's ability to explain the causes of affective reaction in interpersonal contexts (on the AT Justification scale) and also their mental state thinking regarding themselves and their close relationships (on the CRFS).

One explanation of this pattern, as suggested by Klin et al. (2000) and also by Tager-Flusberg (2000), is that intelligent children can "hack out" solutions to theory of mind and other tests. These solutions are less likely to work on the AT Justification scale and on the CRFS, because the latter is specifically designed to make raters aware of canned and intellectual answers and rewards more complex answers containing references to interpersonal and intrapersonal dimensions of experience. In general, the findings that intelligence makes a significant contribution to children's mentalisation abilities are not surprising; they are in line with the expectation that intelligence facilitates the process of making sense of mental phenomena. These results also raise the question of the role played attachment. Fonagy (1997), Fonagy and Target (2003), H. Steele, et al. (1999), Meins et al. (1988), hypothesise that attachment history becomes an important when children are called on to consider more complex attributes of affects, both in interpersonal contexts and within themselves. The findings of this study which show that children's mentalisation abilities are also associated with attachment security, provides general confirmation of this hypothesis.

The findings regarding the relationship between children's mentalisation abilities and expressive language abilities are interesting, but difficult to interpret due to their complexity. Children's expressive language abilities explained approximately 16% of the variance in their performance on the HSS, and 14% of the variance in their self reflective functioning. When it is considered that expressive language abilities were shown to be associated with attachment in the meta-analysis of attachment studies by van IJzendoorn et al. (1999), this raises the question of whether expressive language abilities are also an index of attachment. An alternative and not mutually exclusive explanation is that expressive language abilities are an index of the narrative processes theorised to underlie the development of children mentalisation capacities. These abilities may be particularly

important for self-reflective-functioning and for interpreting the intentions of the speaker in speech acts as assessed by the HSS, and less important for affective understanding as assessed by the AT. The finding that the ability to interpret the intentions of the speaker was related language abilities may reflect a deeper relationship between these abilities, as suggested by Sigman and Ruskin's (1999) finding that the interest of infants in intentional communication predicted later language acquisition. According to Tager-Flusberg (2000), this is because early word learning depends on the interpretation of words and communicative gestures as intentional acts. As suggested by the work of Bretherton (1991), Trevarthen (1980), Fonagy, H. Steele, Moran et al. (1991), and Meins et al., (1998) it may also be that the quality of the intersubjective exchanges between the parent and child, and the parent's contingent response to the child's intentional actions, facilitates the development expressive language abilities and contributes to the development of self and agency.

### ***Mentalisation and Attachment***

The findings of this study show that primary school-aged children's mentalisation abilities, whether assessed from the perspectives of theory of mind, affective understanding or reflective functioning, are closely associated with their attachment security. These findings provide further empirical support for the theoretical model that the development of children's mentalisation abilities is closely related to attachment security. It provides new evidence that this is also the case for the primary school years. These findings build on earlier findings showing that attachment security predict theory of mind performance and understanding of mixed emotions at the end of the pre-school years (Fonagy, 1997; Meins, et al., 1998; H. Steele et al., 1997). They also provide new evidence indicating that securely attached children maintain advantages (demonstrated for the pre-school years) over a range of dimensions of mentalisation, including theory of mind, affective understanding and reflective functioning, on into the primary school years. As Fonagy (1997) hypothesised, securely attached children may, in part, develop superior theory of mind abilities because they feel at liberty to explore the minds of others and engage more frequently in pretend play and parent-child discussions involving mental states.

At the same time, the maternal factors which facilitate security of attachment, such as maternal "mind-mindedness" (Meins, 1997), or reflective functioning (Fonagy & Target, 2003) are also likely to facilitate parent-child emotion focused discussions which contribute to the development of children's mentalisation abilities (Dunn, 1988; Fonagy, H. Steele, Moran et al., 1991; Slade, et al., 1999). The mother's perception of the child as



mentalising and her propensity to attribute intentionality to the infant and consider the infant's internal states, is considered to be a central factor in children's attachment security. Mothers with these abilities, as suggested by Harris (2000), are also likely to engage their children in conversations rich in mental state talk and thus provide explanations of emotional reactions to situations. Securely attached children are then more likely to have the opportunities to learn the narratives regarding how affects work, and when and why certain emotions are evoked. Harris argues that these narratives act like scaffolding to help children organise their thinking about mental states. Parent-child narratives, and parental affect focused explanations and elaborations have been shown to be central in laying the foundation of subsequent memory structures (Bruner, 1990; Fivush et al., 1996), and to forming the conception of the self (Crittenden, 1994; Nelson, 1993). In their model, parent-child narratives become internalised and form the basis of both the perception of the self and various memory systems that are then used for the appraisal and interpretation of mental state phenomena.

The present study provides further evidence of the link between attachment security and development. At this stage, we can only speculate regarding the developmental processes underlying this association; it is unclear whether the advantages in mentalisation of securely attached children can be accounted for mainly in terms of parent-child narrative processes, or from earlier parent-infant processes..

The findings of this study leads to the following conclusions: 1) the measures have promising reliability; 2) children's mentalisation abilities are related to intelligence, expressive language abilities and attachment; 3) family composition is associated with differences in children's mentalisation abilities, with different factors impacting on distinct aspects of mentalisation and sometimes in unexpected ways, suggesting that simple conclusions cannot be drawn in this regard; 4) performance on the HSS and AT are related to child psychopathology and adaptation; 5) the findings draw attention to the importance of a specific ability that up to now has not been focused on in this age group, namely children's capacity to consider the intentions of the speaker when making sense of communication; 6) children's reflective functioning appears to have a complex relationship with affective and behavioural difficulties; it may be that children with exceptionally low as well as exceptionally high reflective functioning are more likely to have affective and behavioural difficulties, although this requires further exploration.

### *Limitations of the Research*

This thesis was undertaken with the primary aim of investigating whether or not the mentalisation abilities of primary school-aged children could be assessed in a reliable and valid way using the HSS, AT and CRFS. While the findings are promising, a number of important limitations need to be noted. In the discussion that follows, issues relating to internal validity will be addressed first. In this respect the questions of the reliability of the measures, selection of subjects, mortality and instrumentation change, and how this impacted on internal validity, will be considered. The question of statistical validity will then be discussed in relation to the sample sizes used in the studies reported on in this thesis.

With respect to sample selection, a number of issues need to be addressed. Firstly, the fact that HSS and CRFS data were only available for children from the referred sample imposes a number of limitations on the interpretation of the study findings. The HSS was introduced relatively late in the study and the Child Attachment Interview, which was used to code child reflective functioning, was still under development during the first part of the study. This accounts for why data for these measures are only available for the referred sample. The present results with respect to reliability are promising in that they suggest that children's theory of mind, affective understanding and reflective functioning can be rated reliably using the coding manuals presented as part of this thesis. At the same time, it should be noted that the findings regarding the scale properties of the HSS and CRFS were obtained using a sample of children referred to mental health services. This raises the question as to whether or not the same results would be obtained with a normal sample. This is also the case for test-retest reliability results, and it could well be that the use of a normal sample will answer some of the questions regarding the test-retest results of the HSS.

The sample composition and study design were not optimal for establishing relationships between mentalisation abilities and other variables, such as intelligence, expressive language abilities, psychopathology and adaptation, making the interpretation of the current findings tentative. The relationship between intelligence and performance on the HSS and CRFS was investigated only in referred children. In addition, the range in terms of the presence and severity of psychopathology included in the present sample was probably too narrow to be optimal for the investigation of the relationship between mentalisation abilities and psychopathology. Two factors contributed to this problem, the

first being that, for the studies focusing on the HSS and CRFS, data was not available for children from the school sample. At the same time, the sample was not specifically selected to include children with significant levels of psychopathology. Only 25% of the families referred to mental health services and who met the selection criteria agreed to participate in the study; it is thus possible that high-risk families or children with more severe levels of psychopathology are under-represented in the present sample. The small number of children with symptoms of depression in the clinical range in the study focusing on the CRFS, illustrates this problem. As a result, it is not possible to conclude whether or not there is a relationship between child reflective functioning and symptoms of depression.

The samples recruited for the current thesis, especially the sample recruited from child referrals to mental health services, are largely representative in terms of the ethnic composition of the greater London area. One of the criteria for inclusion in the study was fluency in English; thus, children from certain ethnic backgrounds, including many recent immigrants, were excluded from study participation. Also, few children from ethnic minorities such as Indian and Pakistani populations participated in the study. This limits the extent to which the findings of this dissertation regarding primary school-aged children's mentalisation abilities can be generalised to these and other minority populations. While there are, at present, no obvious reasons why the interviews would not be appropriate for use with children from different ethnic and cultural backgrounds in cosmopolitan contexts such as that of London, more thought needs to be given to the possible cultural influences impacting on children's performance on these measures. For example, in traditional cultures that demand a formal style of address between children and parents, children may be much more reluctant to talk openly about their relationships with their parents because of the cultural norms of politeness in this regard. In these contexts, it could be conceivably difficult to distinguish between that which children are simply not permitted to express, and the inhibition of expression or thinking about significant relationships in mental state terms. Cultural norms may also influence whether or not children are at ease to share their thoughts with older interviewers or interviewers from other cultures. In communities which have been under threat of political violence, strangers who ask questions may be regarded suspiciously and the type of interview used here is also likely to produce a compromised reflection of children's abilities. It would therefore be important to consider these influences when interviews such as the CAI are used to assess the reflective functioning of children from communities with different recent political histories as well as different cultural norms and practices.

The issue of missing data was addressed earlier in this thesis. The late introduction of measures such as the HSS, as well as the fact that the CAI and AT were being developed during the first part of the study, contributed, in part, to this problem. The lengthy interview process also contributed to the problem; it required families to be patient, compliant and sufficiently well organised, given that three meetings generally were required to complete the interviews. This proved particularly difficult for children and families recruited from the referred sample. In response to this situation, the AMOS programme was used to optimise the HSS and CRFS data set; it used data estimates for missing data based on structural equation modelling. Very similar results were found using the smaller HSS sample with full data and the larger sample in which missing data was replaced with estimated data; this provides further support for the conclusion that this method of dealing with missing data is reliable and definitely preferable to the alternative of discarding these cases because of missing data.

With regard to statistical validity given the sample sizes, the small sample with CAI and CRFS data did, in fact, lead to situations in which the study lacked the power to detect weak relationships. This was the case when examining the relationship between child reflective functioning, intelligence and expressive language abilities. It is expected that significant correlations of a low strength will be found using a larger sample. In light of these difficulties, the results of this study should be considered as somewhat tentative. This also applies to the analyses relating to depression; too few children were classified as clinically depressed to be able to draw conclusions from this sample.

The small sample with CELF-R data limited the analyses which could be performed to investigate the relationship between children's expressive language abilities and their mentalisation abilities as measured by the HSS, AT and CRFS. Only preliminary analyses could be undertaken to examine the relationship between expressive language abilities and mentalisation abilities, and the small sample size meant that weak relationships could not be detected. In view of the small sample sizes that were used to investigate the scale properties of the HSS and CRFS, and were also used to establish the test-retest reliability of the measures, the positive findings reported in this regard need to be considered with some caution until further replication with a larger sample.

At the level of measurement, one limitation of the present study was the fact that psychopathology data was based on child- and parent-report data, and that it was not possible to obtain assessments of psychopathology by mental health specialists using research interviews that have been designed for this purpose. Given that the data on children's intelligence and mentalisation abilities was obtained using objective

assessments, the use of psychopathology data obtained using a similar method would have reduced the impact of respondent and method variance. This would also have provided more reliable data with regard to the presence of child psychopathology.

Because the data on children's behavioural difficulties was based only on parent-reports, this may have limited the sensitivity of data in this domain. The inclusion of information obtained from multiple sources, including peer reports and teacher reports, would have been preferable. The Teacher Report Form of the CBCL was initially included in the study interview battery, but the return rate was so low that it was not possible to use this data. The fact that children were recruited from referrals to mental health services, and thus came from many different schools, contributed to this problem, as these schools had not been canvassed with regard to study participation and were thus not in a position to release information about students. For similar reasons the inclusion of peer assessments of social and behavioural difficulties was not considered feasible. It remains to be seen whether there is a creative solution for this type of problem. Mental health specialists using clinical research interviews and collateral information from teachers may be able to make a sufficiently reliable assessment of children's psychopathology and adaptation difficulties.

Other measures would have been considered for inclusion in the study if it was possible to go back to the drawing board with additional resources and plan a similar study again. The inclusion of Baron-Cohen's Reading the Mind in the Eyes Task (2001) would have provided an opportunity to investigate the relationships between children's socio-cognitive abilities (as measured by the HSS, AT and CRFS) and their ability to identify people's state of mind through the interpretation of the expression in their eyes and the surrounding areas of their faces. Furthermore, the inclusion of the Kusche Affective Interview (Kusche et al., 1988), would have made it possible to determine if performance on the AT converges with performance on the former measure and to compare both the measures with regard to their relationships with intelligence and sensitivity to psychopathology. The Kusche Affective Interview appears to be principally a measure of crystallised socio-cognitive abilities and, possibly, intelligence. The AT, in contrast, is likely to involve more fluid socio-cognitive capacities. The latter hypotheses require further investigation. As it was, the interview battery was already exceedingly time consuming, and the inclusion of additional measures might well have contributed to higher attrition rates. Longer interviews may also have threatened the integrity of the data being collected, with children losing motivation to engage with the tasks. Thus, the decision was made to focus on the development of measures of mentalisation.

### ***Directions for Future Research***

The results of the present study are promising and suggest that children's mentalisation abilities can be reliably assessed from theory of mind, affective understanding and reflective functioning perspectives. Furthermore, the study findings support the conclusion that the HSS, AT and CRFS provide valid measurements of children's mentalisation abilities from theory of mind, affective understanding and reflective functioning perspectives. The findings of the three studies presented in this thesis confirmed that children's mentalisation abilities, as assessed by the HSS, AT and CRFS, although related to intelligence, are distinct abilities. Associations between attachment security and mentalisation abilities were apparent across the different assessment approaches. Relationships between mentalisation abilities and both child-reports of depression and anxiety, and parent-reports of children's adaptive functioning, were identified in spite of the fact that different methods were used in assessing psychopathology and children's mentalisation abilities. This methodological limitation could have been expected to reduce the chances of finding relationships between psychopathology and mentalisation, because of the method variance introduced. These findings are thus very promising and provide general support for the construct and discriminatory validity of these three measures of mentalisation. The relationships between performance on the HSS, AT and CRFS also reflect good concurrent and convergent validity when mentalisation is assessed using these three different measures. The findings provide support for the argument that it is possible to conduct scientifically meaningful and reliable investigations of children's mentalisation abilities. The interesting pattern of results, especially in relation to psychopathology, suggests that further investigations are warranted. Accordingly, priorities for future research will be presented.

### ***Replication of Reliability Study***

The first priority is the replication of the reliability studies to determine whether or not the findings of the present studies, with respect to interrater reliability, and internal consistency, can be replicated with a larger sample. With regard to the CRFS, it remains to be determined if the Self and Other factor structure that was identified in this thesis will be found to be robust and will be replicated with another sample. Similarly, the good test-retest results of the CRFS require replication with a larger sample.

With regard to the HSS and AT, it is still unclear why their test-retest reliability and stability over time was much lower than those of the CRFS. In the case of the HSS, further investigations using children recruited from schools or a community sample, and

who have lower levels of psychopathology than the sample used here, may help explain why theory of mind abilities appear to be more state like than was expected, especially over shorter periods. The collection of additional information regarding life events could help to clarify whether this contributes to variation in a child's motivation to think in mental state terms.

The findings with respect to the relationships between intelligence and both theory of mind abilities and reflective functioning also require replication with a sample that includes children recruited from the community or from schools in order to represent a wider range in terms of the presence or absence of psychopathology. Now that it has been demonstrated that it is possible to obtain reliable assessments of children's mentalisation abilities using the manuals presented here, an important next step would be to conduct a factor analytic study using a similar methodology to that of Wong et al. (1995) and Jones and Day (1997).

In addition, the assessment of child psychopathology data based on clinical research interviews, rather than self- and parent-reports, is considered to be a priority for a future study of the relationship between children's mentalisation abilities and psychopathology. This will not only lead to increased reliability of the child psychopathology data, but will also reduce method variance.

### ***Further Development of Measures of Children's Mentalisation***

The low test-retest reliability of the AT Challenge, Impact and Internal/External scales suggests that, at present, the method for assessing these aspects of children's affective understanding is not optimal and that further work at this level of scale development is required. In retrospect, it may be that assessing these abilities in a semi-structured way, in the context of children's responses to the Accuracy and Justification questions, introduced unnecessary variation in the ways these abilities were addressed by the interviewers. Also, in an effort to explore these abilities in a more conversational way, the questions used to rate Challenge, Impact and Internal/External were asked in the context of the child's responses, but this also meant that the emotions these questions were asked about, depended on the child's narrative. The fact that the questions were not asked about the same emotions may have contributed to the low stability of performance on scales like the Impact scale. It is known, for example, that children struggle much more when considering the resolution of negative affects. The introduction of a more standard way of testing children's understanding of the resolution of negative affects seems feasible and may well contribute to more useful and reliable results. The same applies to the Challenge and Internal/External scales. With regard to the Internal/External

scale, a clear emphasis on the understanding of emotional display rules, rather than on the more general understanding that it is possible to feel one feeling and show another, may also improve the reliability and validity of this scale. In sum, what is being suggested is that it may be possible to improve the test-retest reliability of the AT Challenge, Impact and Internal/External scales by using specific scenarios to assess these abilities, rather than assessing these important capacities in the context of children's responses to the AT Justification questions. In addition, further research on the convergent validity of the AT and the Kusche Affective Interview (Kusche et al., 1988) is called for.

With regard to the CRFS, the question of children who seem to show exceptionally high reflective functioning and fall at the extreme upper end of the normal distribution, is intriguing and demands further examination. It possible that further scale development could take into account the positive and negative valences of the affects and attributes used in describing the self and relationships this might help to unravel the apparent mystery of high reflective functioning being associated with psychopathology.

### ***Theory of Mind, Affective Understanding, Reflective Functioning and Mind-Reading***

The inclusion of Baron-Cohen's (2001) new Reading the Mind in the Eyes Task in future studies of children's mentalisation abilities will provide an opportunity to explore to what extent, if any, children's cognitive ability to understand the mental and affective states of others is associated with mind-reading abilities. It may also be possible to identify more naturalistic methods for assessing children's ability to understand mental states and affects in everyday interactions when they have to process interpret and integrate information coming from multiple sources. Such a study would thus permit the investigation of how abilities involving different levels of penetration into the minds of others (Whiten, 1994) are linked. This would also provide an opportunity to determine if cognitive abilities are linked with mind-reading abilities, and the ability to understand the meaning of communication as it happens in everyday situations (where what is said verbally may convey a different message than what is said by the eyes, the posture, and tone of voice).

### ***Mentalisation and Disorganised Attachment***

The findings that children's mentalisation abilities, as assessed from the perspectives of theory of mind, affective understanding and reflective functioning are associated with attachment security underscores the important links between attachment and mentalisation. Further work exploring the impact of attachment disorganisation is called for.



### ***Interactions between Mentalisation Abilities and Other Child Factors***

Further research is also needed to clarify the developmental interactions between the mentalisation abilities assessed in this study and other child factors that have been identified in the literature as salient in terms of their contribution to psychopathology i.e., empathy, temperament, negative affect, executive control and impulsivity.

### ***Family and Parental Factors***

The present study focused mainly on child factors, and the relationships between different dimensions of children's functioning, including theory of mind, affective understanding, reflective functioning, cognitive abilities, language skills and psychopathology. The finding that family composition impacts on primary school-aged children's mentalisation abilities, underscores how sensitive the development of mentalisation abilities are to various family factors. The hypotheses regarding the mechanisms and processes that are the most critical for the development of children's mentalisation abilities require verification. The inclusion of the following assessments, in addition to the child measures used, could help to clarify the relationship between the parent's engagement in behaviours known to contribute to children's mentalisation abilities, and the parent's capacity see the child in terms of his intentions, affects and mental states: 1) assessments of parent's identification of children's intentional behaviour and their contingent responses to this behaviour, as well as of parental engagement in pretend play and emotional discourse; these assessments would be based on naturalistic observation as used by Dunn (1988); 2) assessment of parental aggression, coercion and humiliation of the child; 3) parent measures which can be used to assess the complexity and quality of the parent's representation of the child, such as the Parent Development Interview-Revised (PDI-R: Slade, Aber, Mayes, Target & Blatt, 2000).

A study focusing on sexually abused children is currently underway at Laval University, Québec City, Canada; in this study the PDI is being used to obtain information on the parent's mentalisation about the child. Preliminary results indicate that parental reflective functioning and representations interact with sexual abuse in the prediction of psychopathology.

### ***Psychopathology***

In light of the findings of this study that there is a relationship between child psychopathology and both theory of mind abilities, and affective understanding, this needs to be explored further in studies specially designed for this purpose. Ideally, such a study would include both children recruited from a normal sample and children with diagnosed psychopathology, possibly matched in terms of socio-economic background

and intelligence.

The lack of significant findings in the present study with regard to behavioural difficulties also requires further consideration. It has been suggested that the use of parent-reports which are open to the impact of parental psychopathology, and distortions in parental representations of their children contributed to the lack of significant results. Assessment by teachers and peers or observations undertaken by researchers at home and at school may provide a more reliable indicator of behavioural and adaptation difficulties. Data on children's behaviour in different contexts, obtained from multiple informants and using multiple methods, including direct observation, is necessary in order to obtain a more reliable picture of the relationship between children's mentalisation abilities, as presented in this thesis, and specific externalising difficulties, including negative affectivity and poor impulse control in social settings. Accordingly, the inclusion of a measure of executive control (Posner & Rothbart, 2000) would help to elucidate the relationship between the mentalisation abilities presented in this thesis and self-regulation, an ability which has been identified as particularly relevant in terms of children's efficacy and self-regulation in social contexts. Ideally, such a study would identify the contributions of mentalisation abilities, as assessed in this thesis, and executive control, as well as directly test more specific hypotheses that a theory of bad minds (Happé and U. Frith, 1996), deficits in empathy (Blair et al., 1996), negative attributional biases in the interpretation of the intentions of others (Dodge et al., 1984), and attachment disorganisation (Moss & St-Laurent, 1999) are implicated in conduct problems.

The findings from the current study suggest that there is a link between both depressive and anxiety, and theory of mind ability as reflected in children's ability to consider the intentions of others in communication. However, it remains to be shown if affective symptomatology is also linked more generally to children's ability to see themselves in intentional terms and to take an intentional stance. Given that the aim of this thesis was to evaluate the reliability and validity of the measures, it was not appropriate to discuss the relationships between performance on measures like the CRFS and subscales of the CDI and Harter, but at this level relationships emerged between self reflective functioning and personal efficacy, interpersonal problems and social acceptance that warrant further examination.

The question also remains as to the direction of the relationship between theory of mind and affective difficulties. Would the latter difficulties respond to treatments that included a focus on the development of these mentalising abilities? If affect and

mentalisation are inextricably linked, as is suggested by present evidence from neuroscience (Klin et al., 2000), interventions which focus on facilitating mentalisation could be presumed to have an impact on affect, but this remains to be investigated. It also remains to be seen whether such interventions could impact on negative affectivity and impulse control.

### ***Cross-Cultural Application of the Tests***

Further consideration needs to be given to the assessment of children from different cultural and linguistic backgrounds. With regard to culture, different norms regarding politeness and different ways of addressing and talking about elders can be expected to affect the performance of children from different cultures on the measures that have been presented in this study. The reluctance of children from traditional cultures to talk about conflictual situations with parents, as in the CRFS interview, may therefore have a different meaning. This raises other interesting questions regarding possible cultural differences with regard to parent-child conversations involving emotions, and the possible impact of these different cultural styles on the development of children's mentalisation about affects.

In addition, the measures used in this dissertation require that children have more than a working knowledge of the language used in the interview. Even children who are able to function well at school in a second language may not have the ease and confidence that is necessary use the second language to express thoughts about mental states, affects and interpersonal phenomena; they may thus appear to function at a much lower level than when they use their mother tongue. This implies that these present measures will not be reliable when used with children from refugee families and recent immigrants, unless the interview can be done in the child's home language. At the same time this raises questions regarding the impact that learning a new language has on the development of theory of mind and affective understanding. This question is particularly pertinent in the context of international adoptions, where the native language of the child is frequently different from that of the adoptive family. Further research is needed to determine the impact of this on the development of the mental state language in these already vulnerable children.

### ***Impact of Abuse on Reflective Functioning***

In light of the robust reliability results of the reflective functioning scale, further work is called for to investigate Fonagy and Target's (2003) hypothesis that risk factors such as sexual abuse and low reflective functioning interact in the aetiology of personality disorders. Preliminary results of research presently being conducted at Laval University

Québec City, Canada, indicate that children with a history of sexual abuse and who also have low reflective functioning are more likely to have affective and behaviour difficulties, and that dissociation of affect and thinking is implicated. On a more positive note, research on the impact of interventions informed by a reflective functioning perspective indicates that relatively short interventions can help many of these children regain their ability to use their mentalising abilities. Preliminary results suggest that interventions help to diminish dissociation and that these children, when followed up after a 1-year period no longer showed severe psychopathology. These findings, although preliminary, suggest that the reflective functioning perspective can inform interventions which target the development of mentalisation abilities. They also suggest that these interventions can be particularly helpful to children who have experienced trauma and abuse. Further research comparing the efficacy of this treatment with other interventions using a standard randomised control trial methodology is currently being planned.

### ***Longitudinal Research***

Longitudinal research will make it possible to investigate interactions between child, parent, family, contextual and demographic factors in the development of both mentalisation abilities and psychopathology. A study following children from birth to primary school could make a significant contribution to the understanding of these interactions. In addition, longitudinal research with children who had experienced sexual abuse during the pre-school years, will make it possible to address some of the questions regarding resilience and mentalisation abilities.

### **Conclusion**

This thesis reported on the development and adaptation of three measures and coding systems designed to assess primary school-aged children's mentalisation abilities from theory of mind, affective understanding, and reflective functioning perspectives. The HSS, the AT and the CRFS emerged as very promising instruments when used to assess the mentalisation abilities of primary school-aged children. Moreover, the measures were shown to be generally reliable and valid. Further research using some of these measures is already under way and has underscored their usefulness. At the same time additional work on the development of the measures is warranted in order to standardise them and improve their psychometric properties.

## REFERENCES

- Achenbach, T. M. (1978). The Child Behavior Profile: I. Boys Aged 6-11. *Journal of Consulting and Clinical Psychology, 46*(3), 478-488.
- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-8 and 1991 Profile*. Burlington, VT: University of Vermont.
- Achenbach, T. M. (1992). Developmental Psychopathology. In *Developmental Psychopathology (3rd edition)* (pp. 629-675). Hillsdale, N.J.: Lawrence Erlbaum.
- Achenbach, T. M., & Edelbrock, C. S. (1983). *Manual for the Child Behaviour Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont.
- Ainsworth, M. D. S. (1982). Attachment: Retrospect and prospect. In C. M. Parkers & J. Stevenson-Hinde (Eds.), *The Place of Attachment in Human Behavior* (pp. 3-30). New York, NY: Basic Books.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213-232.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1971). Attachment and exploratory behaviour of one-year-olds. In H. R. Schaffer (Ed.), *The origins of human social relations*, New York: Academy Press.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.
- Altshuler, J. L., & Ruble, D. N. (1989). Developmental changes in children's awareness of strategies for coping with uncontrollable stress. *Child Development, 60*, 1337-1349.
- Anderson, J. R. (1976). *Language, memory, and thought*. Hillsdale, N.J.: Erlbaum.
- Arbuckle, J. L. (1994). AMOS (Version 4.01). Chicago: Small Waters Corporation.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: individual differences and their relationship to psychological well being in adolescence. *Journal of Youth and Adolescence, 16*, 427-454.

- Arsenio, W. F., & Kramer, R. (1992). Victimizers and their victims: Children's conceptions of the mixed emotional consequences of moral transgression. *Child Development, 63*, 915-927.
- Arsenio, W. F., & Lover, A. (1997). Emotions, conflicts and aggression during pre-schoolers' free play. *British Journal of Developmental Psychology, 15*, 531-542.
- Astington, J. (1994). *The Child's Discovery of the Mind*. London: Fontana Press.
- Astington, J., & Gopnik, A. (1991). Developing understanding of desire and intention. In A. Whiten (Ed.), *Natural Theories of Mind: The Evolution, Development and Simulation of Second Order Mental Representations* (pp. 39-50). Oxford, UK: Basil Blackwell.
- Astington, J., & Jenkins, J. (1995). Theory of mind development and social understanding. *Cognition and Emotion, 9*, 151-165.
- Baldwin, J. M. (1906). *Social and Ethical Interpretations in Mental Development* (4 ed.). London, UK: Macmillan.
- Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin, 121*(1), 65-94.
- Baron-Cohen, S. (1988). Social and pragmatic deficits in autism: cognitive or affective? *Journal of Autism and Developmental Disorders, 18*(3), 379-403.
- Baron-Cohen, S. (1993). From attention-goal psychology to belief-desire psychology: The development of a theory of mind, and its dysfunction. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds: Perspectives from Autism* (pp. 59-82). Oxford, UK: Oxford University Press.
- Baron-Cohen, S. (1994). How to build a baby that can read minds: Cognitive mechanisms in mind reading. *Current Psychology of Cognition, 13*, 513-552.
- Baron-Cohen, S. (1995). *Mind blindness: An Essay on Autism and Theory of Mind*. Cambridge, MA: Bradford, MIT Press.
- Baron-Cohen, S. (1997). *Reading the Mind in the Eye Test*. Oxford, UK: Oxford University.
- Baron-Cohen, S. (2000a). Autism: deficits in folk psychology exist alongside superiority in folk physics. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 73-82). Oxford, UK: Oxford University Press.

- Baron-Cohen, S. (2000b). Theory of mind and autism: A fifteen-year review. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 3-20). Oxford, UK: Oxford University Press.
- Baron-Cohen, S. (2001). *Reading the Mind in the Eye Test*. Oxford, UK: Oxford University Press.
- Baron-Cohen, S., & Goodheart, F. (1994). The 'seeing leads to knowing' deficit in autism: The Pratt and Bryant probe. *British Journal of Developmental Psychology*, 12, 397-402.
- Baron-Cohen, S., & Hammer, J. (1997). Is autism an extreme form of the male brain? *Advances in Infancy Research*, 11, 193-217.
- Baron-Cohen, S., Jolliffe, T., Mortimore, C., & Robertson, M. (1997). Another advanced test of theory of mind: Evidence from very high functioning adults with autism or Asperger Syndrome. *British Journal of Developmental Psychology*, 13, 813-822.
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a "theory of mind"? *Cognition*, 21, 37-46.
- Baron-Cohen, S., & Robertson, M. (1995). Children with either autism, Gilles de la Tourette syndrome or both: Mapping cognition to specific syndromes. *Neurocase*, 1, 101-104.
- Baron-Cohen, S., & Swettenham, J. (1996). The relationship between SAM and ToMM: Two hypotheses. In P. Carruthers & P. K. Smith (Eds.), *Theories of Theories of Mind* (pp. 158-168). Cambridge, UK: Cambridge University Press.
- Baron-Cohen, S., Tager-Flusberg, H., & Cohen, D. J. (1993). *Understanding Other Minds: Perspectives from Autism*. Oxford, UK: Oxford University Press.
- Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the mind in the eyes" Test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42(2), 241-251.
- Bartko, J. J. (1976). On the methods and theory of reliability. *Journal of Nervous and Mental Disease*, 163(5), 307-317.
- Bartsch, K., & Wellman, H. M. (1995). *Children Talk about the Mind*. Oxford, UK: Oxford University Press.



- Bates, E., Benigni, L., Bretherton, I., Camaioni, L., & Volterra, V. (1979). Cognition and communication from 9-13 months: Correlational findings. In E. Bates (Ed.), *The Emergence of Symbols: Cognition and Communication in Infancy* (New York: Academic Press).
- Beaver, B. R. (1997). The role of emotion in children's selection of strategies for coping with daily stresses. *Merril-Palmer Quarterly*, 43, 129-146.
- Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy, An International Quarterly*, 1, 5-37.
- Beebe, B., Lachmann, F., & Jaffe, J. (1997). Mother - infant interaction structures and presymbolic self and object representations. *Psychoanalytic Dialogues*, 7, 113-182.
- Beebe, B., & Lachmann, F. M. (1988). The contribution of mother-infant mutual influence to the origins of self- and object representations. *Psychoanalytic Psychology*, 5, 305-337.
- Beeghly, M., & Cicchetti, D. (1994). Child maltreatment, attachment, and the self system: Emergence of an internal state lexicon in toddlers at high social risk. *Development and Psychopathology*, 6, 5-30.
- Belsky, J. (1999). Quantity of nonmaternal care and boys' problem behavior/adjustment at 3 and 5: Exploring the mediating role of parenting. *Psychiatry: Interpersonal and Biological Processes*, 62, 1-20.
- Belsky, J., & Cassidy, J. (1994). Attachment: Theory and evidence. In M. Rutter & D. Hay (Eds.), *Development through life: A handbook for clinicians* (pp. 373-402). Oxford, UK: Blackwell.
- Belsky, J., Garduque, L., & Hrnacir, E. (1984). Assessing performance, competence and executive capacity in infant play: Relations to home environment and security of attachment. *Developmental Psychology*, 20, 406-417.
- Belsky, J., Rovine, M., & Taylor, D. G. (1984). The Pennsylvania Infant and Family Development Project. III: The origins of individual differences in infant-mother attachment: Maternal and infant contributions. *Child Development*, 55, 718-728.
- Benoit, D., & Parker, K. (1994). Stability and transmission of attachment across three generations. *Child Development*, 65, 1444-1457.

- Berlin, L., Cassidy, J., & Belsky, J. (1995). Loneliness in young children and infant-mother attachment: A longitudinal study. *Merrill-Palmer Quarterly*, 41, 91-103.
- Bernzweig, J., Eisenberg, N., & Fabes, R. A. (1993). Children's coping in self- and other-relevant contexts. *Journal of Experimental Child Psychology*, 55, 208-226.
- Bion, W. R. (1962a). A theory of thinking. *International Journal of Psycho-Analysis*, 43, 306-310.
- Bion, W. R. (1962b). *Learning from Experience*. London, UK: Heinemann.
- Blair, R. J. R. (1995). A cognitive developmental approach to morality: Investigating the psychopath. *Cognition*, 57, 1-29.
- Blair, R. J. R., Jones, L., Clark, F., & Smith, M. (1997). The psychopathic individual: A lack of responsiveness to distress cues? *Psychophysiology*, 34, 192-198.
- Blair, R. J. R., Sellars, C., Strickland, I., Clark, F., Williams, A., Smith, M., & Jones, L. (1996). Theory of mind in the psychopath. *The Journal of Forensic Psychiatry*, 7, 15-25.
- Bolton, D., & Hill, J. (1996). *Mind, meaning and mental disorder*. Oxford, UK: Oxford University Press.
- Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited. *Journal of Personality and Social Psychology*, 79, 631 - 643
- Bowlby, J. (1969). *Attachment and Loss, Vol. 1: Attachment*. London, UK: Hogarth Press.
- Bowlby, J. (1973). *Attachment and Loss, Vol. 2: Separation: Anxiety and Anger*. London, UK: Hogarth Press.
- Bowlby, J. (1980). *Attachment and Loss, Vol. 3: Loss: Sadness and Depression*. London: Hogarth Press.
- Bowlby, J. (1988). *A Secure Base: Clinical Applications of Attachment Theory*. London, UK: Routledge.
- Bowling, B., & Jones, D. C. (1993). *Family expressiveness and display rule knowledge*. Paper presented at the Biennial meeting of the Society for Research in Child Development : Emotions and the Family, New Orleans, LA.

- Brazelton, T. B., Kowalski, B., & Main, M. (1974). The origins of reciprocity: The early mother-infant interaction. In M. Lewis & L. Rosenblum (Eds.), *The Effect of the Infant on its Caregiver* (pp. 49-76). New York: John Wiley.
- Brazelton, T. B. (1982). Joint regulation of neonate parent behavior. In E. Z. Tronick (Ed.), *Social Interchange in Infancy* (pp. 7-27). Baltimore: University Park Press.
- Bremner, J. D., Randall, T., Scott, T. M., Brunen, R. A., Seibyl, J. P., Southwick, S. M., et al. (1995). MRI-based measurement of hippocampal volume in patients with combat-related PTSD. *American Journal of Psychiatry*, 152, 973-981.
- Bremner, J. D., Randall, P., Vermetten, E., & Staib, L. (1997). Elevated CSF corticotropin-releasing factor concentrations in posttraumatic stress disorder. *American Journal of Psychiatry*, 154(5), 624-629.
- Bremner, J. D., & Vermetten, E. (2001). Stress and development: behavioural and biological consequences. *Development and Psychopathology*, 13, 473-489.
- Brentano, F. (1924). *Psychologie vom empirischen standpunkt*. Leipzig: O. Kraus.
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development*, 50(1-2), 3-35.
- Bretherton, I. (1990). Open communication and internal working models: Their role in the development of attachment relationships. In R. A. Thompson (Ed.), *Socio-emotional development: Nebraska symposium on motivation, 1988* (Vol. 36, pp. 57-113). Lincoln: University of Nebraska Press.
- Bretherton, I. (1991). Intentional communication and the development of an understanding of mind. In D. Frye & C. Moore (Eds.), *Children's theories of mind: Mental states and social understanding* (pp. 271-289). Hillsdale, NJ: Lawrence Erlbaum.
- Bretherton, I., Bates, E., Benigni, L., Camaioni, L., & Volterra, V. (1979). Relationships between cognition, communication, and quality of attachment. In I. Bretherton, E. Bates, L. Benigni, L. Camaioni & V. Volterra (Eds.), *The Emergence of Symbols: Cognition and Communication in Infancy* (pp. 223-269). New York: Academic Press.
- Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Developmental Psychology*, 18(6), 906-921.

- Bretherton, I., Fritz, J., Zahn-Waxler, C., & Ridgeway, D. (1986). Learning to talk about emotions: A functionalist perspective. *Child Development*, 57, 529-548.
- Bretherton, I., McNew, S., & Beeghley-Smith, M. (1981). Early person knowledge as expressed in gestural and verbal communication: When do infants acquire a "theory of mind"? In M. E. Lamb & L. R. Sherrod (Eds.), *Infant Social Cognition* (Hillsdale, NJ: Lawrence Erlbaum).
- Bretherton, I., & Munholland, K. A. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* (New York: The Guilford Press).
- Brody, L., & Hall, J. A. (1993). Gender and emotion. In M. Lewis & J. Haviland (Eds.), *Handbook of Emotions* (pp. 447-460). New York: The Guilford Press.
- Brown, J. R., Covell, K., & Abromovitch, R. (1991). Time course and control of emotion: Age differences in understanding and recognition. *Merill-Palmer Quarterly*, 37, 273-287.
- Brown, J. R., Donelan-McCall, N., & Dunn, J. (1996). Why talk about mental states? The significance of children's conversations with friends, siblings, and mothers. *Child Development*, 67, 836-849.
- Brown, J. R., & Dunn, J. (1992). Talk with your mother or your sibling? Developmental changes in early family conversations about feelings. *Child Development*, 63, 336-349.
- Bruner, J. (1990). *Acts of Meaning*. Cambridge: Harvard University Press.
- Buckley, M. R., Cote, J. A., & Comstock, S. M. (1990). Measurement errors in the behavioural science: the case of personality\attitude research. *Educational and Psychological Measurement*, 50, 447-474.
- Butterworth, G. E. (1991). The ontogeny and phylogeny of joint visual attention. In A. Whiten (Ed.), *Natural Theories of Mind* (Oxford, UK: Basil Blackwell).
- Campbell, J. D., & Lavalley, L. F. (1993). Who am I? The role of self-concept confusion in understanding the behavior of people with low self-esteem. In R. F. Baumeister (Ed.), *Self-Esteem: The Puzzle of Low Self-Regard* (pp. 3-20 : Plenum Series in Social/Clinical Psychology). New York: Plenum Press.

- Campos, J. J. (1983). The importance of affective communication in social referencing: A commentary on Feinman. *Merrill Palmer Quarterly*, 29(1), 83-87.
- Camras, L. A., & Allison, K. (1985). Children's understanding of emotional facial expressions and verbal labels. *Journal of Non-Verbal Behaviour*, 9, 84-94.
- Camras, L. A., Ribordy, S., Hill, J., & Martino, S. (1988). Recognition and posing of emotional expressions by abused children and their mothers. *Developmental Psychology*, 24(6), 776-781.
- Camras, L. A., Ribordy, S., Hill, J., & Martino, S. (1990). Maternal facial behavior and the recognition and production of emotional expression by maltreated and nonmaltreated children. *Developmental Psychology*, 26(2), 304-312.
- Cantor, N., & Kihlstrom, J. F. (1987). *Personality and Social Intelligence*. Englewood Cliffs, N.J.: Prentice-Hall.
- Carlson, E. A. (1998). A prospective longitudinal study of attachment disorganization/disorientation. *Child Development*, 69, 1107-1128.
- Carlsson, E., & Sroufe, L. A. (1995). Contribution of attachment theory to developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology. Vol. 1: Theory and Methods* (pp. 581-617). New York: Wiley
- Caron, A. J., Caron, R., Roberts, J., & Brooks, R. (1997). Infant sensitivity to deviations in dynamic facial vocal displays: the role of eye regard. *Deevlopmental Psychology*, 33(5), 802-813.
- Carpenter, W. T., Bartko, J. J., Carpenter, C. L., & Strauss, J. S. (1976). On various intraclass correlation reliability coefficients. *Psychological Bulletin*, 83(5), 762-765.
- Caroll, J. J., & Steward, M. S. (1984). The role of cognitive development in children's understanding of their own feelings. *Child Development*, 55, 1468-1492.
- Carruthers, P., & Smith, P. K. (Eds.). (1996). *Theories of Theories of Mind* (Cambridge: Cambridge University Press.
- Casey, R. J. (1993). Children's emotional experience: Relations among expression, self report, and understanding. *Developmental Psychology*, 29, 119-129.
- Casey, R. J., & Schlosser, S. (1994). Emotional responses to peer praise in children with and without a diagnosed externalising disorder. *Merill-Palmer Quarterly*, 40, 60-81.

- Cassam, Q. (1994). *Self-knowledge*. Oxford, UK: Oxford University Press.
- Cassidy, J. (1988). Child-mother attachment and the self in six-year-olds. *Child Development*, 59, 121-134.
- Cassidy, J., Parke, R. D., Butkovsky, L., & Braungart, J. M. (1992). Family-peer connections: The roles of emotional expressiveness within the family and children's understanding of emotions. *Child Development*, 63, 603-618.
- Cassidy, J., Scolton, K. L., Kirch, S. J., & Parke, R. D. (1996). Attachment and representations of peer relationships. *Developmental Psychology*, 32(5), 892-904.
- Chandler, M. (1982). Social cognition and social structure. In F. C. Serafica (Ed.), *Social Cognitive Development in Context*. New York: The Guilford Press.
- Charman, T. (1994). How understanding the role of affect will help us to decide if SAM and ToMM are separable cognitive mechanisms. *Current Psychology of Cognition*, 13(5), 569-574.
- Chisolm, K. (1998). A three year follow-up of attachment and indiscriminate friendliness in children adopted from Russian orphanages. *Child Development*, 69, 1092-1106.
- Ciarrochi, J. V., Chan, A. Y. C., & Caputi, P. (2000). A critical evaluation of the emotional intelligence construct. *Personality and Individual Differences*, 28(3), 539-561.
- Cicchetti, D. (1991). Fractures in the crystal: Developmental psychopathology and the emergence of the self. *Developmental Review*, 11, 271-287.
- Cicchetti, D., & Rogosch, F. A. (1999). Conceptual and Methodological Issues in Developmental Psychopathology Research. In P. C. Kendall, J. M. Butcher & G. N. Holmbeck (Eds.), *Handbook of Research Methods in Clinical Psychology*. New York: John Wiley & Sons.
- Collins, N., & Read, S. J. (1990). Adult attachment, working models and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58, 633-644.
- Collins, N., & Read, S. J. (1994). Representations of attachment: The structure and function of working models. In K. Bartholomew & D. Perlman (Eds.), *Advances in Personal Relationships Vol 5: Attachment Process in Adulthood* (pp. 53-90). London: Jessica Kingsley Publishers.

- Cooley, C. H. (1964/1902). *Human Nature and the Social Order (revised edition)*. New York: Schocken Books.
- Cook, E. T., Greenberg, M. T., & Kusche, C. A. (1994). The relations between emotional understanding, intellectual functioning, and disruptive behaviour problems in elementary-school-aged children. *Journal of Abnormal Child Psychology*, 22(2), 205-219.
- Corcoran, R. (2000). Theory of mind in other clinical conditions: Is a selective 'theory of mind' deficit exclusive to autism? In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding other Minds* (pp. 391-421). Oxford, UK: Oxford University Press.
- Coster, W. J., Gersten, M. S., Beeghly, M., & Cicchetti, D. (1989). Communicative functioning in maltreated toddlers. *Developmental Psychology*, 25(6), 1020-1029.
- Craik, K. (1943). *The Nature of Explanation*. Cambridge, UK: Cambridge University Press.
- Crittenden, P. M. (1994). Peering into the black box: A exploratory treatise on the development of self in young children. In D. Cicchetti & S. L. Toth (Eds.), *Disorders and dysfunctions of the self. Rochester Symposium on Developmental Psychopathology, Vol 5* (pp. 79-148). Rochester, NY: University of Rochester Press.
- Crowell, J., Waters, E., Treboux, D., O'Connor, E., Colon-Downs, C., & Feider, O. (1996). Discriminant validity of the Adult Attachment Interview. *Child Development*, 67(5), 2584 - 2599.
- Cummings, E. M. (1995). Security, emotionality and parental depression: A commentary. *Developmental Psychology*, 31, 425-427.
- Cummings, E. M., & Davies, P. T. (1994). Maternal depression and child development. *Journal of Child Psychology and Psychiatry*, 35, 73-112.
- Cummings, E. M., Iannotti, R. J., & Zahn-Waxler, C. (1985). Influence of conflict between adults on the emotions and aggression of young children. *Developmental Psychology*, 21, 495-507.
- Cummings, E. M., Zahn-Waxler, C., & Radke-Yarrow, M. (1981). Young children's responses to expressions of anger and affection by others in the family. *Child Development*, 52, 1274-1282.

- Damasio, A. R. (1994). *Descartes's Error: Emotion, Reason, and the Human Brain*. New York: G.P. Putnam's Sons.
- Damasio, A. R., Tranel, D., & Damasio, H. (1990). Individuals with sociopathic behavior caused by frontal damage fail to respond autonomically to social stimuli. *Behavioural Brain Research*, 41(2), 81-94.
- Damon, W., & Hart, D. (1988). *Self-understanding in childhood and adolescence*. Cambridge studies in social and emotional development New York: Cambridge University Press.
- Dasser, V., Ulbaek, I., & Premack, D. (1989). Perception of intention. *Science*, 243, 365-367.
- Davidson, D. (1980). Psychology as philosophy. In D. Davidson (Ed.), *Essays on Actions and Events* (Oxford, UK: Oxford University Press).
- De Villiers, J. G., & De Villiers, P. A. (1999). Linguistic determinism and false belief. In P. Mitchell & K. Riggs (Eds.), *Children's Reasoning and the Mind* (Hove: Psychology Press).
- Deater-Deckard, K., Dunn, J., O'Connor, T. G., Davies, L., & Golding, J. (2001). Using the stepfamily genetic design to examine gene-environment processes in child and family functioning : The Avon Longitudinal Study of Parents and Children (ALSPAC). *Marriage and Family Review*, 33(2-3), 131-156.
- DeKlyen, M. (1996). Disruptive behavior disorders and intergenerational attachment patterns: A comparison of normal and clinic-referred preschoolers and their mothers. *Journal of Consulting and Clinical Psychology*, 64, 357-365.
- Denham, S. A. (1986). Social cognition, social behaviour and emotion in pre-schoolers: Contextual validation. *Child Development*, 57, 194-201.
- Denham, S. A. (1998). *Emotional Development in Young Children*. New York: The Guildford Press.
- Denham, S. A., Cook, M. C., & Zoller, D. (1992). "Baby looks very sad": Discussions about emotions between mother and preschooler. *British Journal of Developmental Psychology*, 10, 301-315.
- Denham, S. A., & Couchoud, E. A. (1990). Young preschoolers' understanding of equivocal emotion situations. *Child Study Journal*, 20, 193-202.



- Denham, S. A., & Groot, L. (1992). Mothers' emotional expressiveness and coping: Topography and relations with pre-schoolers' emotional competence. *Genetic, Social and General Psychology Monographs*, 118, 75-101.
- Denham, S. A., McKinley, M., Couchoud, E. A., & Holt, R. (1990). Emotional and behavioural predictors of peer status in young preschoolers. *Child Development*, 61, 1145-1152.
- Denham, S. A., Renwick-DeBardi, S., & Hewes, S. (1994). Affective communication between mothers and preschoolers: Relations with social-emotional competence. *Merill-Palmer Quarterly*, 40, 488-508.
- Denham, S. A., Zahn-Waxler, C., Cummings, E. M., & Iannotti, R. J. (1991). Social competence in young children's peer relationships: Patterns of development and change. *Child Psychiatry and Human Development*, 22, 29-43.
- Denham, S. A., & Zoller, D. (1991). "When my hamster died, I cried": Preschoolers' attributions of the causes of emotions. *Journal of Genetic Psychology*, 152, 371-373.
- Denham, S. A., Zoller, D., & Couchoud, E. A. (1994). Socialization of preschoolers emotion understanding. *Developmental Psychology*, 30, 928-936.
- Dennett, D. C. (1971). Intentional systems. *Journal of Philosophy*, 8, 87-106.
- Dennett, D. C. (1987). *The Intentional Stance*. Cambridge, Mass.: MIT Press.
- De Wolff, M. S., & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68, 571-591.
- Dodge, K. A., Murphy, R. R., & Buchsbaum, K. (1984). The assessment of intention-cue detection skills in children: Implications for developmental psychopathology. *Child Development*, 55(1), 163-173.
- Dodge, K. A. (1991). The structure and function of reactive and proactive aggression. In D. J. Pepler & K. H. Rubin (Eds.), *The Development and Treatment of Childhood Aggression* (pp. 201-218). Hillsdale, NJ: Erlbaum.
- Dodge, K. A., Pettit, G., & Bates, J. E. (1994). Socialization mediators of the relation between socioeconomic status and child conduct problems. *Child Development*, 65, 649-665.
- Dunn, J. (1988). *The Beginnings of Social Understanding*. Oxford: Basil Blackwell Ltd and Cambridge, MA: Harvard University Press.

- Dunn, J. (1993). Social interaction, relationships, and the development of causal discourse and conflict management. Special Issue: Everyday life, social meanings, and cognitive functioning. *European Journal of Psychology of Education*, 8(4), 391-401.
- Dunn, J. (1993). *Young Children's Close Relationships: Beyond Attachment*. California: Sage Publications, Inc.
- Dunn, J. (1994). Changing minds and changing relationships. In C. Lewis & P. Mitchell (Eds.), *Children's Early Understanding of Mind: Origins and Development* (pp. 297-310). Hove, UK: Lawrence Erlbaum.
- Dunn, J. (1996). The Emanuel Miller Memorial Lecture 1995. Children's relationships: Bridging the divide between cognitive and social development. *Journal of Child Psychology and Psychiatry*, 37, 507-518.
- Dunn, J. (1999). Mindreading and social relationships. In M. Bennett (Ed.), *Developmental psychology: Achievements and prospects* (pp. 55-71). Philadelphia, PA: Psychology Press.
- Dunn, J. (2000). Mind-reading, emotion understanding, and relationships. *International Journal of Behavioral Development*, 24(2), 142-144.
- Dunn, J. (2002). Mindreading, emotion understanding, and relationships. In W. W. Hartup & R. K. Silbereisen (Eds.), *Growing Points in Developmental Science: An introduction*. (pp. 167-176). Philadelphia, PA: Psychology Press.
- Dunn, J., Bretherton, I., & Munn, P. (1987). Conversations about feeling states between mothers and their young children. *Developmental Psychology*, 23, 132-139.
- Dunn, J., & Brown, J. R. (1991). Relationships, talk about feelings, and the development of affect regulation in early childhood. In J. Garber & K. A. Dodge (Eds.), *The Development of Emotion Regulation and Dysregulation* (pp. 89-108). New York: Cambridge University Press.
- Dunn, J., & Brown, J. R. (1993). Early conversations about causality: Content, pragmatics and developmental change. *British Journal of Developmental Psychology*, 11(2), 107-123.
- Dunn, J., & Brown, J. R. (1994). Affect expression in the family, children's understanding of emotions, and their interactions with others. Special Issue: Children's emotions and social competence. *Merrill-Palmer-Quarterly*, 40(1), 120-137.
- Dunn, J., Brown, J. R., & Beardsall, L. (1991). Family talk about feeling states and children's later understanding of others' emotions. *Developmental Psychology*, 27, 448-455.

- Dunn, J., Brown, J. R., & Maguire, M. (1995). The development of children's moral sensibility: Individual differences and emotion understanding. *Developmental Psychology*, 31(4), 649-659.
- Dunn, J., Brown, J. R., Slomkowski, C., Tesla, C., & Youngblade, L. (1991). Young children's understanding of other people's feelings and beliefs: Individual differences and their antecedents. *Child Development*, 62(6), 1352-1366.
- Dunn, J., Cutting, A. L., & Demetriou, H. (2000). Moral sensibility, understanding others, and children's friendship interactions in the preschool period. *British Journal of Developmental Psychology*, 18(2), 159-177.
- Dunn, J., & Hughes, C. (1998). Young children's understanding of emotions within close relationships. *Cognition and Emotion*, 12, 171-190.
- Easterbrooks, M. A., & Abeles, R. (2000). Windows to the self in 8-year-olds: bridges to attachment representations and behavioural adjustment. *Attachment and Human Development*, 2(1), 85-106.
- Edelbrock, C., Costello, E. J., Dulcan, M. K., Conover, N. C., & Kalas, R. (1986). Parent-child agreement on child psychiatric symptoms assessed via structured interview. *Journal of Child Psychology and Psychiatry*, 27, 181-190.
- Egeland, B., & Farber, E. A. (1984). Infant-mother attachment: Factors related to its development and change over time. *Child Development*, 55, 753-771.
- Eisenberg, N. (1991). Values, sympathy, and individual differences: Toward a pluralism of factors influencing altruism and empathy. *Psychological Inquiry*, 2(2), 128-131.
- Eisenberg, N., Bernzweig, J., & Fabes, R. A. (1991). Coping and vicarious emotional responding. In T. M. Field, P. M. McCabe & N. Schneiderman (Eds.), *Stress and Coping in Infancy and Childhood* (pp. 101-117). Hillsdale, NJ: Erlbaum.
- Eisenberg, N., & Fabes, R. A. (1992). Emotion, regulation and the development of social competence. In M. Clarke (Ed.), *Review of Personality and Social Psychology* (Vol. 14, pp. 119-150). Newbury Park, CA: Sage.
- Eisenberg, N., & Fabes, R. A. (1994). Mother's reactions to children's negative emotions: Relations to children's temperament and anger behaviour. *Merrill-Palmer Quarterly*, 40, 138-156.
- Eisenberg, N., & Miller, P. (1990). The development of prosocial behavior versus nonprosocial behavior in children. In M. Lewis & S. M. Miller (Eds.), *Handbook of Developmental Psychopathology. Perspectives in Developmental Psychology* (pp. 181-188). New York: Plenum Press.

- Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the Human Face*. New York: Pergamon Press.
- Elicker, J., Englund, M., & Sroufe, L. A. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. Parke & G. Ladd (Eds.), *Family-Peer Relationships: Modes of Linkage* (pp. 77-106). Hillsdale, NJ: Erlbaum.
- Emde, R. N. (1988a). Development terminable and interminable. I. Innate and motivational factors from infancy. *International Journal of Psycho-Analysis*, 69, 23-42.
- Emde, R. N. (1988b). Development terminable and interminable. II. Recent psychoanalytic theory and therapeutic considerations. *International Journal of Psycho-Analysis*, 69, 283-286.
- Endicott, J., & Spitzer, R. L. (1978). A diagnostic interview: The schedule for affective disorders and schizophrenia. *Archives of General Psychiatry*, 35, 837-844.
- Erickson, M. F., Sroufe, L. A., & Egeland, B. (1985). The relationship between quality of attachment and behavior problems in preschool in a high-risk sample. *Monographs of the Society for Research in Child Development*, 50(1-2), 147-166.
- Esteves, F., Parra, C., Dimberg, U., & Oehman, A. (1994). Automatically elicited fear: Conditioned skin conductance responses to masked facial expressions. *Cognition and Emotion*, 8(5), 393-413.
- Fabes, R. A., & Eisenberg, N. (1992). Young children's coping with interpersonal anger. *Child Development*, 63, 116-128.
- Fabes, R. A., Eisenberg, N., & Miller, P. A. (1990). Maternal correlates of children's vicarious emotional responsiveness. *Developmental Psychology*, 26, 639-648.
- Fabes, R. A., Eisenberg, N., Nyman, M., & Mischealieu, Q. (1991). Young children's appraisals of others' spontaneous emotional reactions. *Developmental Psychology*, 27(5), 858-866.
- Fabes, R. A., Eisenberg, N., Karbon, M., Bernzweig, J., Speer, A. L., & Carlo, G. (1994). Socialization of children's vicarious emotional responding and prosocial behaviour: Relations with mothers' perceptions of children's emotional reactivity. *Developmental Psychology*, 30, 44-55.
- Fabricius, W., & Schwanenflugel, P. (1994). The older child's theory of mind. In A. Demetriou & A. Efklides (Eds.), *Intelligence, Mind and Reasoning: Structure and Development* (pp. 111-132). Amsterdam: Elsevier Science Publishers.

- Feinman, S. (1991). Social referencing and the social construction of reality in infancy. New York: Plenum Press.
- Feldman, R., & Reznick, J. S. (1996). Maternal perception of infant intentionality at 4 and 8 months. *Infant Behaviour and Development*, 19, 483 - 496.
- Felleman, E. S., Barden, R. C., Carlson, C. R., Rosenberg, L., & Masters, J. C. (1983). Children's and adult's recognition of spontaneous and posed emotional expression in young children. *Developmental Psychology*, 19, 405-413.
- Fernald, A. (1993). Approval and disapproval: Infant responsiveness to vocal affect in familiar and unfamiliar languages. *Child Development*, 61, 657-674.
- Ferster, C. B. (1973). A functional analysis of depression. *American Psychologist*, 28, 857-869.
- Field, T., Healy, B., Goldstein, S., & Guthertz, M. (1990). Behavior-state matching and synchrony in mother-infant interactions of nondepressed vs. depressed dyads. *Developmental Psychology*, 26, 7-14.
- Field, T., & Walden, T. A. (1982). Production and discrimination of facial expressions by preschool children. *Child Development*, 53, 1299-1311.
- Fischer, K. W., & Ayoub, C. (1994). Affective splitting and dissociation in normal and maltreated children: Developmental pathways for self in relationships. In D. Cicchetti & S. Toth (Eds.), *Rochester Symposium on Developmental Psychopathology: Disorders and dysfunctions of the self* (Vol. 5, pp. 149-222). Rochester, NY: University of Rochester Press.
- Fisher, L., Ames, E. W., Chisholm, K., & Savoie, L. (1997). Problems reported by parents of Romanian orphans adopted to British Columbia. *International Journal of Behavioral Development*, 20, 67-82.
- Fivush, R. (1993). The emotional content of parent-child conversations about the past. In C. A. Nelson (Ed.), *Minnesota symposium on child psychology* (Vol. 26 : Memory and affect in development, pp. 39-77). Hillsdale, NJ: Erlbaum.
- Fivush, R., Haden, C., & Reese, E. (1996). Autobiographical knowledge and autobiographical memories. In D.C.Rubin (Ed.), *Remembering our Past: Studies in Autobiographical Memory* (pp. 341-359). New York: Cambridge University Press.

- Flavell, J. H., Flavell, E. R., & Green, F. (1983). Development of the appearance-reality distinction. *Cognitive Psychology*, 15, 95-120.
- Flavell, J. H., Green, F. L., & Flavell, E. R. (1995). Young children's knowledge of thinking. *Monographs of the Society for Research in Child Development*, 68, 39-47.
- Fodor, J. A. (1987). *Psychosemantics*. Cambridge, Mass: MIT Press.
- Fonagy, P. (1989). On tolerating mental states: Theory of mind in borderline patients. *Bulletin of the Anna Freud Centre*, 12, 91-115.
- Fonagy, P. (1991). Thinking about thinking: Some clinical and theoretical considerations in the treatment of a borderline patient. *International Journal of Psycho-Analysis*, 72, 1-18.
- Fonagy, P. (1997). Attachment and theory of mind: Overlapping constructs? *Association for Child Psychology and Psychiatry Occasional Papers*, 14, 31-40.
- Fonagy, P., Gergely, G., Jurist, E., & Target, M. (2002). *Affect Regulation, Mentalisation and the Development of the Self*. New York: Other Press.
- Fonagy, P., & Higgitt, A. (1989). A developmental perspective on borderline personality disorder. *Revue Internationale de Psychopathologie*, 1, 125-159.
- Fonagy, P., Leigh, T., Kennedy, R., Mattoon, G., Steele, H., Target, M., Steele, M., & Higgitt, A. (1995). Attachment, borderline states and the representation of emotions and cognitions in self and other. In D. Cicchetti & S. S. Toth (Eds.), *Rochester Symposium on Developmental Psychopathology: Cognition and emotion* (Vol. 6, pp. 371-414). Rochester, NY: University of Rochester Press.
- Fonagy, P., Redfern, S., & Charman, T. (1997). The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). *British Journal of Developmental Psychology*, 15, 51-61.
- Fonagy, P., Steele, H., Moran, G. S., Steele, M., & Higgitt, A. (1991). The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal*, 13, 200-217.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, 62, 891-905.

- Fonagy, P., Steele, M., Moran, G. S., Steele, H., & Higgitt, A. (1992). The integration of psychoanalytic theory and work on attachment: The issue of intergenerational psychic processes. In D.Stern & M.Ammaniti (Eds.), *Attaccamento E Psiconalis* (pp. 19-30). Bari, Italy: Laterza.
- Fonagy, P., Steele, M., Steele, H., Higgitt, A., & Target, M. (1994). Theory and practice of resilience. *Journal of Child Psychology and Psychiatry*, 35, 231-257.
- Fonagy, P., & Target, M. (1995). Dissociation and trauma. *Current Opinions in Psychiatry*, 8, 161-166.
- Fonagy, P., & Target, M. (1996). Playing with reality: I. Theory of mind and the normal development of psychic reality. *International Journal of Psycho-Analysis*, 77, 217-233.
- Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organization. *Development and Psychopathology*, 9, 679-700.
- Fonagy, P., & Target, M. (2003). *Psychoanalytic Theories: Perspectives from Developmental Psychopathology*. New York: Brunner-Routledge.
- Fonagy, P., Target, M., Steele, H., & Steele, M. (1998). *Reflective-Functioning Manual, version 5.0, for Application to Adult Attachment Interviews*. London: University College London.
- Fonagy, P., Target, M., Steele, H., Steele, M., Charman, T., Leeuwerik, T., & Ensink, K. (2000). *The Affect Task Coding Manual*. Unpublished manuscript, London, UK: University College London.
- Fonagy, P., Target, M., Steele, M., & Steele, H. (1997). The development of violence and crime as it relates to security of attachment. In J. D. Osofsky (Ed.), *Children in a Violent Society* (pp. 150-177). New York: The Guilford Press.
- Fraiberg, S. H., Adelson, E., & Shapiro, V. (1975). Ghosts in the nursery: A psychoanalytic approach to the problem of impaired infant-mother relationships. *Journal of the American Academy Child Psychiatry*, 14, 387-422.
- Freud, S. (1911). Formulations on the two principles of mental functioning. In J.Strachey (Ed.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (pp. 67-104). London: Hogarth Press.

- Freud, S. (1933). New introductory lectures on psychoanalysis. In J. Strachey (Ed.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (Vol. 22, pp. 1-182). London: Hogarth Press.
- Frith, C. D., & Corcoran, R. (1996). Exploring theory of mind in people with schizophrenia. *Psychological Medicine*, 26, 521-530.
- Frith, C. D., & Frith, U. (2000). The physiological basis of theory of mind: Functional neuroimaging studies. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (Oxford, UK: Oxford University Press).
- Frith, U., Happé, F. G. E., & Siddons, F. (1994). Autism and theory of mind in everyday life. *Social Development*, 3, 108-124.
- Frommer, & O'Shea. (1973). Antenatal identification of women likely to have problems in managing their infants. *British Journal of Psychiatry*, 123, 149-156.
- Frye, D. (1991). The origins of intention in infancy. In D. Frye & C. Moore (Eds.), *Children's Theories of Mind* (pp. 15-38). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Frye, D., Zelazo, P. D., & Palfai, T. (1995). Theory of mind and rule based reasoning. *Cognitive Development*, 10, 483-527.
- Garner, P. W., Jones, D. C., Gaddy, G., & Rennie, K. (1997). Low income mothers' conversations about emotions and their children's emotional competence. *Social Development*, 6, 37-52.
- Garner, P. W., Jones, D. C., & Miner, J. L. (1994). Social competence among low-income preschoolers: Emotion socialisation practices and social cognitive correlates. *Child Development*, 65, 622-637.
- Garner, P. W., Jones, D. C., & Palmer, D. J. (1994). Social cognitive correlates of preschool children's sibling caregiving behaviour. *Developmental Psychology*, 30, 905-911.
- Garner, P. W., & Power, T. G. (1996). Preschooler's emotional control in the disappointment paradigm and its relation to temperament, emotion knowledge, and family expressiveness. *Child Development*, 67, 1406-1419.
- Gelfand, D. M., & Hartmann, D. P. (1975). *Child Behavior Analysis and Therapy*. New York: Pergamon.



- George, C., Kaplan, N., & Main, M. (1985). *The Adult Attachment Interview*. Unpublished manuscript, Berkeley : Department of psychology, University of California at Berkeley.
- George, C., & Main, M. (1979). Social interaction of young abused children: Approach, avoidance and aggression. *Child Development*, 50, 306-318.
- George, C., & Solomon, J. (1999). Attachment and caregiving: The caregiving behavioral system. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research, and Clinical Applications* (pp. 649-670). New York: The Guilford Press.
- Gergely, G. (2002). The development of understanding of self and agency. In U. Goshwami (Ed.), *Handbook of Childhood Cognitive Development* (pp. 203-253). Malden, MA: Blackwell Publishers.
- Gergely, G., Nadasdy, Z., Csibra, G., & Biro, S. (1995). Taking the intentional stance at 12 months of age. *Cognition*, 56, 165-193.
- Gergely, G., & Watson, J. (1996). The social biofeedback model of parental affect-mirroring. *International Journal of Psycho-Analysis*, 77, 1181-1212.
- Gnepp, J. (1989). Personalised inferences of emotions and appraisals: Component processes and correlates. *Developmental Psychology*, 25, 277-288.
- Gnepp, J., & Gould, M. E. (1985). The development of personalised inferences: Understanding other people's emotional reactions in light of their prior experiences. *Child Development*, 56, 1455-1464.
- Gnepp, J., McKee, E., & Domanic, J. A. (1987). Children's use of situation information to infer emotion: Understanding emotionally equivocal situations. *Developmental Psychology*, 23, 114-123.
- Goel, V., Graffman, J., Sadato, N., & Hallet, M. (1995). Modelling other minds. *Neuroreport*, 6, 1741-1746.
- Goldberg, S., Muir, R., & Kerr, J. (1995). *Attachment Theory: Social, Developmental and Clinical Perspectives*. Hillsdale, NJ: Analytic Press.
- Goldman, A. (1992). In defense of simulation theory. *Mind and Language*, 7(1-2), 104-119.

- Goldsmith, H. H., & Alansky, J. A. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytical review. *Journal of Consulting and Clinical Psychology, 55*, 806-816.
- Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam Books.
- Gopnik, A. (1996). Theories and modules, creation myths, developmental realities and Neurath's boat. In P. Carruthers & P. K. Smith (Eds.), *Theories of Theories of Mind* (pp. 169-183). Cambridge, UK: Cambridge University Press.
- Gopnik, A., & Astington, J. W. (1988). Children's understanding of representational change and its relation to the understanding of false-belief and the appearance-reality distinction. *Child Development, 59*, 26-37.
- Gopnik, A., Capps, L., & Meltzoff, A. N. (2000). Early theories of mind: What the theory can tell us about autism. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 50-82). Oxford, UK: Oxford University Press.
- Gopnik, A., & Meltzoff, A. N. (1997). *Words, thoughts and theories*. Cambridge, Mass.: Bradford Books, MIT Press.
- Gordon, A. C. L., & Olson, D. R. (1998). The relation between acquisition of a theory of mind and the capacity to hold in mind. *Journal of Experimental Child Psychology, 68*(1), 70-83.
- Gordon, R. M. (1986). Folk psychology as simulation. *Mind and Language, 1*, 158-171.
- Gordon, R. M. (1992a). Folk psychology: Simulation or tacit theory": Reply to Stich and Nichols. *Mind and Language, 7*(1-2), 87-97.
- Gordon, R. M. (1992b). Simulation theory: Ojections and misconceptions. *Mind and Language, 7*(1-2), 11-34.
- Granleese, J., & Joseph, S. (1994). Reliability of the Harter Self-Perception Profile for Children and predictors of global self-worth. *Journal of Genetic Psychology, 155*(4), 487-492.
- Greenberg, M. T., & Kusche, C. A. (1989). Cognitive, personal, and social development of deaf children and adolescents.
- Greenberg, M. T., & Kusche, C. A. (1998). Preventive interventions for school-age deaf children: The PATHS curriculum. *Journal of Deaf Studies and Deaf Education., 3*(1), 49-63.

- Greenberg, M. T., Kusche, C. A., Cook, E. T., & Quamma, J. P. (1995). Promoting emotional competence in school-aged children: The effects of the PATHS curriculum. *Development and Psychopathology*, 7(1), 117-136.
- Greenberg, M. T., Speltz, M. L., DeKlyen, M., & Endriga, M. C. (1991). Attachment security in preschoolers with and without externalizing problems: A replication. *Development and Psychopathology*, 3, 413-430.
- Grice, H. P. (1975). Logic and conversation. In R. Cole & J. Morgan (Eds.), *Syntax and Semantics: Speech Acts* (pp. 41-58). New York: Academic Press.
- Griffin, J., Carlson, G., Taylor, M., & Wilson, J. (1997). The relation between individual differences in fantasy and theory of mind. *Child Development*, 68(3), 436-455.
- Gross, A. L., & Ballif, B. (1991). Children's understanding of emotion from facial expressions and situations: A review. *Developmental Review*, 11, 368 - 398.
- Gross, D., & Harris, P. (1988). Understanding false-beliefs about emotion. *International Journal of Behavioural Development*, 11, 475-488.
- Grossmann, K. E., & Grossmann, K. (1991). Attachment quality as an organizer of emotional and behavioural responses in a longitudinal perspective. In C. M. Parkes, J. Stevenson-Hinde & J. Marris (Eds.), *Attachment across the life cycle* (pp. 93-114). London and New York: Routledge.
- Grossmann, K., Grossmann, K. E., Spangler, G., Suess, G., & Unzner, L. (1985). Maternal sensitivity and newborn orienting responses as related to quality of attachment in Northern Germany. In I. Bretherton & E. Waters (Eds.), *Growing Points in Attachment Theory and Research*. (Vol. 50, pp. 233-256). Monographs of the Society for Research in Child Development.
- Grossman, K. E., Grossman, K., & Zimmerman, P. (1999). A wider view of attachment and exploration. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 760-789). New York: The Guilford Press.
- Haden, C. A., Haine, R. A., & Fivush, R. (1997). Developing narrative structure in parent-child reminiscing across the preschool years. *Developmental Psychology*, 33, 295-307.
- Halpern, D. (1992). *Sex Differences in Cognitive Ability*. Hillsdale, NJ: Hillsdale.

- Happé, F. G. E. (1993). Communicative competence and theory of mind in autism: A test of relevance theory. *Cognition*, 48, 101-119.
- Happé, F. G. E. (1994). An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped and normal children and adults. *Journal of Autism and Developmental Disorders*, 24, 129-154.
- Happé, F. G. E. (1995). The role of age and verbal ability in the theory of mind task performance of subjects with autism. *Child Development*, 66, 843-855.
- Happé, F. G. E., & Frith, U. (1996). Theory of mind and social impairment in children with conduct disorder. *British Journal of Developmental Psychology*, 14, 385-398.
- Harris, P. L. (1994). The child's understanding of emotion: Developmental change and the family environment. *Journal of Child Psychology and Psychiatry*, 35, 3-28.
- Harris, P. L. (2000). Understanding emotion. In C. Lewis & J. Haviland (Eds.), *Handbook of Emotions* (2 ed., pp. 253-322). New York: The Guildford Press.
- Harris, P. L., Johnson, C. N., Hutton, D., Andrews, G., & Cooke, T. (1989). Young children's theory of mind and emotion. *Cognition and Emotion*, 3, 379-400.
- Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development*, 53, 87-97.
- Harter, S. (1983). Developmental perspectives on the self-esteem. In P. Mussen & E. M. Hetherington (Eds.), *Handbook of child psychology : Socialization, personality, and social development* (4 ed., Vol. 4, pp. 275-385). New York, NY: Wiley.
- Harter, S. (1985). Manual for the Self Perception Profile for Children (revision of the Perceived Competence Scale for Children). Unpublished manuscript, Denver, CO: University of Denver.
- Harter, S. (1990). Developmental differences in the nature of self-representations: Implications for the understanding, assessment, and treatment of maladaptive behavior. *Cognitive Therapy and Research*, 14(2), 113-142.
- Harter, S. (1999). The construction of the self: A developmental perspective. New York: The Guilford Press.
- Harter, S., & Buddin, B. (1987). Children's understanding of the simultaneity of two emotions: A five-stage acquisition sequence. *Developmental Psychology*, 23, 388-399.

- Harter, S., & Pike, R. (1984). The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children. *Child Development*, 55, 1969-1982.
- Hartmann, D. P. (1992). Design, Measurement, and Analysis: Technical Issues in Developmental Research. In M. H. Bornstein & M. H. Lamb (Eds.), *Developmental Psychology: An Advanced Textbook (3rd edition)*. Hillsdale, N.J.: Lawrence Erlbaum.
- Haskett, M. E. (1990). Social problem-solving skills of young physically abused children. *Child Psychiatry and Human Development*, 21(2), 109-118.
- Haskett, M. E., & Kistner, J. A. (1991). Social interactions and peer perceptions of young physically abused children. *Child Development*, 62(5), 979-990.
- Hazan, C. (1990). Love and work: an attachment theoretical perspective. *Journal of Personality and Social Psychology*, 59, 270-280.
- Heider, F. (1958). The psychology of interpersonal relations. New York: Wiley.
- Heider, F., & Simmel, M. (1944). An experimental study of apparent behaviour. *American Journal of Psychology*, 57, 243-259.
- Henshaw, S. P., & Melnick, S. M. (1995). Peer Relationships in boys with attention-deficit hyperactivity disorder with and without comorbid aggression. *Development and Psychopathology*, 7, 622-647.
- Herrenkohl, R. C., & Herrenkohl, E. C. (1981). Some antecedents and developmental consequences of child maltreatment. In R. Rizley & D. Cicchetti (Eds.), *New Directions for Child Development: Developmental Perspectives on Child Maltreatment* (pp. 57-76). San Francisco, CA.: Jossey-Bass.
- Hesse, E. (1999). The adult attachment interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory Research and Clinical Applications* (pp. 395-433). New York: The Guilford Press.
- Hinshaw, S. P. (1992). Externalizing behaviour problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin*, 111, 127-155.
- Hoare, P., Elton, R., Greer, A., & Kerley, S. (1993). The modification and standardisation of the Harter self-esteem questionnaire with Scottish school children. *European Child and Adolescent Psychiatry*, 2(1), 19-33.

- Hodges, J., & Tizard, B. (1989). IQ and behavioral adjustment of ex-institutional adolescents. *Journal of Child Psychology and Psychiatry*, 30, 53-75.
- Hodges, K. (1995). *The Child and Adolescent Functioning Assessment Scale (CAFAS)*. Unpublished manuscript, Seattle, WA: University of Washington.
- Hodges, K., Wong, M. M., & Latessa, M. (1998). Use of the Child and Adolescent Functional Assessment Scale (CAFAS) as an outcome measure in clinical settings. *Journal of Behavioral Health Services and Research*, 25(3), 325-336.
- Hofer, M. A. (1995). Hidden regulators: Implications for a new understanding of attachment, separation and loss. In S. Goldberg, R. Muir & J. Kerr (Eds.), *Attachment Theory: Social, Developmental, and Clinical Perspectives* (pp. 203-230). Hillsdale, N.J.: The Analytic Press, Inc.
- Hoffman, M. L. (1994). Discipline and internalization. *Developmental Psychology*, 30(1), 26-28.
- Hoffman-Plotkin, D., & Twentyman, C. T. (1984). A multimodal assessment of behavioural and cognitive deficits in abused and neglected pre-schoolers. *Child Development*, 55, 795-802.
- Hoffsteatter, P. R. (1954). The changing composition of intelligence: A study of the t-technique. *Journal of Genetic Psychology*, 85, 159-164.
- Howes, C., Hamilton, C. E., & Matheson, C. C. (1994). Children's relationships with peers: Differential associations with aspects of the teacher-child relationship. *Child Development*, 65, 253-263.
- Hubbs-Tait, L., Osofsky, J., Hann, D., & Culp, A. (1994). Predicting behavior problems and social competence in children of adolescent mothers. *Family Relations*, 43, 439-446.
- Hughes, C. (1998). Executive functions in pre-schoolers: Links with theory of mind and verbal ability. *British Journal of Developmental Psychology*, 16, 233-253.
- Hughes, C., White, A., Sharpen, J., & Dunn, J. (2000). Antisocial, angry, and unsympathetic: "Hard-to-manage" preschoolers' peer problems and possible cognitive influences. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 41(2), 169-179.

- Humphrey, N. K. (1980). Nature's psychologists. In B.D.Josephson & V.S.Ramachandran (Eds.), *Consciousness and the Physical World* (pp. 57-80). Oxford, UK: Pergamon Press.
- Isaacs, S. (1991). The nature and function of phantasy. In P. King & R. Steiner (Eds.), *The Freud-Klein Controversies 1941-45 : New Library of Psychoanalysis* (Vol. 11, pp. 264-321). London, UK: Tavistock/Routledge.
- Isabella, R. A. (1993). Origins of attachment: Maternal interactive behaviour across the first year. *Child Development*, 64, 605-621.
- Izard, C. E., & Malatesta, C. Z. (1987). Perspectives on emotional development I: Differential emotions theory of early emotional development. In J. D. Osofsky (Ed.), *Handbook of Infant Development* (2 ed., pp. 494-554). Oxford, England: John Wiley & Sons.
- Jacobsen, T., & Hoffman, V. (1997). Children's attachment representations: Longitudinal relations to school behaviour and academic competency in middle childhood and adolescence. *Developmental Psychology*, 33(4), 703 - 710.
- Jacobson, E. (1964). *The Self and the Object World*. New York: International Universities Press.
- Jacobvitz, D., & Hazen, N. (1999). Developmental pathways from infant disorganisation to childhood peer relationships. In J. Solomon & C.George (Eds.), *Attachment Disorganisation* (pp. 127-159). New York: Guilford Press.
- Jenkins, J. M., & Astington, J. W. (1996). Cognitive factors and family structure associated with theory of mind development in young children. *Developmental Psychology*, 32, 70-78.
- Johnson, M. H., Dziurawiec, S., Ellis, H., & Morton, J. (1991). Newborns' preferential tracking of face-like stimuli and its subsequent decline. *Cognition*, 40(1-2), 1-19.
- Jolliffe, T., & Baron-Cohen, S. (1999). The strange stories test: A replication with high-functioning adults with autism or Asperger's syndrome. *Journal of Autism and Developmental Disorders*, 29(5), 395-406.
- Jones, K., & Day, J. D. (1997). Discrimination of two aspects of cognitive-social intelligence from academic intelligence. *Journal of Educational Psychology*, 89, 486-497.

- Jones, R. R., Reid, J., & Patterson, G. (1973). Naturalistic observation in clinical observation. In P. McReynolds (Ed.), *Advances in Psychological Assessment* (Vol. 3, pp. 42-95). San Francisco: Jossey-Bass.
- Karon, B. P. (1981). The Thematic Apperception Test. In A. E. Rabin (Ed.), *Assessment with Projective Techniques* (pp. 85-120). New York: Springer.
- Kavanaugh, R. D., Eizenman, D. R., & Harris, P. L. (1997). Young children's understanding of pretense expressions of independent agency. *Developmental Psychology*, 33(5), 764-770.
- Kazdin, A. E. (2002). Psychosocial Treatments for Conduct Disorder in Children and Adolescents. In P. E. Nathan & J. M. Gorman (Eds.), *A Guide to Treatments that Work* (2<sup>nd</sup> Ed., pp. 57-87). New York: Oxford University Press.
- Keane, S. P., & Parrish, A. E. (1992). The role of affective information in the determination of intent. *Developmental Psychology*, 28(1), 159-162.
- Kernberg, P. F. (1984). *Reflections in the Mirror: Mother-child Interactions, Self-Awareness, and Self-Recognition*. New York: Basic Books.
- Kestenbaum, R., Farber, E. A., & Sroufe, L. A. (1989). Individual differences in empathy among pre-schoolers: Relation to attachment history. In N. Eisenberg & R. A. Fabes (Eds.), *New directions for child development: No. 44. Emotion and its regulation in early development*. (pp. 51-64). San Francisco: Jossey-Bass.
- Klein, M. (1935). A contribution to the psychogenesis of manic-depressive states. *International Journal of Psycho-Analysis*, 16, 145-174.
- Klein, M. (1940). Mourning and its relation to manic-depressive states. *International Journal of Psycho-Analysis*, 21, 125-153.
- Klein, M. (1945/1975). The Oedipus complex in the light of early anxieties. In *The Writings of Melanie Klein* (pp. 370-419). London: Hogarth Press.
- Klimes-Dougan, B., & Kistner, J. (1990). Physically abused preschoolers' responses to peers' distress. *Developmental Psychology*, 26(4), 599-602.
- Klin, A., Schultz, R., & Cohen, D. J. (2000). Theory of mind in action: Developmental perspectives on social neuroscience. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding other Minds* (pp. 357-390). Oxford, UK: Oxford University Press.
- Kline, P. (2000). *The Handbook of Psychological Testing*. New York: Routledge.



- Klinnert, M. D., Emde, R. N., Butterfield, P., & Campos, J. J. (1988). Social referencing: The infant's use of emotional signals from a friendly adult with mother present. In S. Chess & A. Thomas (Eds.), *Annual Progress in Child Psychiatry and Child Development* (pp. 26-39). Philadelphia, PA: Brunner/Mazel.
- Kobak, R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation and perceptions of self and others. *Child Development*, 59, 135-146.
- Kochanska, G., Murray, S., & Coy, K. (1997). Inhibitory control as a contributor to conscience in childhood: From toddler to early school age. *Child Development*, 68(2), 263-277.
- Kohut, H. (1977). *The Restoration of the Self*. New York: International Universities Press.
- Kovacs, M. (1986). Children's self-reports of psychological adjustment and coping strategies during the first year of insulin dependent diabetes mellitus. *Diabetes Care*, 9, 472-479.
- Kovacs, M. (1992). *Children's Depression Inventory*. North Tanawanda, NY: Multi-Health Systems.
- Kovacs, M., & Beck, A. T. (1977). An empirical-clinical approach toward a definition of childhood depression. In J.G.Schulterbrandt & A.Raskin (Eds.), *Depression in Childhood* (pp. 1-25). New York: Raven.
- Krebs, J. R., & Dawkins, R. (1984). Mindreading and manipulation. In J. R. Krebs & N. B. Davies (Eds.), *Behavioural Ecology: An Evolutionary Approach* (Oxford, UK: Basil Blackwell).
- Krystal, H. (Ed.). (1988). *Integration and Self-Healing: Affect, Trauma, Alexithymia*. (Hillsdale, NJ: Analytic Press.
- Kuhn, D. (1992). Cognitive Development. In M. H. Bornstein & M. E. Lamb (Eds.), *Developmental Psychology: An Advanced Textbook (3rd Edition)* (pp. 211-272). Hillsdale, N.J.: Lawrence Erlbaum.
- Kusche, C. A., Cook, E. T., & Greenberg, M. T. (1994). The relations between emotional understanding, intellectual functioning, and disruptive behavior problems in elementary-school-aged children. *Journal of Abnormal Child Psychology*, 22(2), 205-219.

- Kusche, C. A., Garfield, S. T., & Beilge, B. (1988). *The Kusche affective interview*. Unpublished manuscript, University of Washington, Department of Psychology.
- Lamb, M. E., Gaensbauer, T. J., Malkin, C. M., & Shultz, L. A. (1985). The effects of child maltreatment on security of infant-mother attachment. *Infant Behavior and Development*, 8, 35-45.
- Lamb, M. E., & Sherrod, L. R. (1981). *Infant Social Cognition: Empirical and Theoretical Considerations*. New Jersey, NJ: Lawrence Erlbaum Associates.
- Lazarus, R. (1984). On the primacy of cognition. *American Psychologist*, 39, 124-129.
- LeDoux, J. E. (1995). Emotion: Clues from the brain. *Annual Review of Psychology*, 46, 209-235.
- LeDoux, J. E. (1996). *The Emotional Brain: The Mysterious Underpinnings of Emotional Life*. New York: Simon & Schuster.
- Lee, J. E., Wong, C. M. T., Day, J. D., Maxwell, S. E., & Thorpe, P. (2000). Social and academic intelligences: A multitrait multimethod study of their crystallized and fluid characteristics. *Personality and Individual Differences*, 29(3), 539-553.
- Leeuwerik, T. (1999). *Theory of Mind in Middle childhood: An assessment of the Affect Task and the Mean and Nice Interaction Scale*. Unpublished M.Sc., London, UK: University College London.
- Leslie, A. M. (1986). Getting development off the ground: Modularity and the infant's perception of causality. In P. L. vanGeert (Ed.), *Theory Building in Developmental Psychology* (pp. 110-137). Amsterdam: Elsevier Science Publishers.
- Leslie, A. M. (1987). Pretense and representation: The origins of 'Theory of Mind'. *Psychological Review*, 94, 412-426.
- Leslie, A. M. (1994a). Spatiotemporal continuity and the perception of causality in infants. *Perception*, 13, 287-305.
- Leslie, A. M. (1994b). TOMM, ToBy, and agency: core architecture and domain specificity. In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 119-148). New York: Cambridge University Press.
- Leslie, A. M., & Keeble, S. (1987). Do six-month-olds perceive causality? *Cognition*, 25, 265-288.

- Lewis, C. (1994). Episodes, events and narratives in the child's understanding of mind. In C. Lewis & P. Mitchell (Eds.), *Children's Early Understanding of Mind. Origins and Development*. (pp. 475-480). Hove, England: Erlbaum.
- Lewis, C., Freeman, H., Kyriakidou, C., Maridaki-Kassotaki, K. M., & Berridge, D. M. (1996). Social influences on false-belief access: Specific sibling influences or general apprenticeship? *Child Development*, 9, 2930 - 2947.
- Lewis, D. (1966). An argument for the identity theory. *Journal of Philosophy*, 63, 17-25.
- Lewis, M., & Feiring, C. (1989). Infant, mother, and mother-infant interaction behavior and subsequent attachment. *Child Development*, 60, 831-837.
- Lewis, M., Feiring, C., McGuffog, C., & Jaskir, J. (1984). Predicting psychopathology in six-year-olds from early social relations. *Child Development*, 55, 123-136.
- Lewis, M., & Michalson, L. (1983). Children's emotions and moods: Developmental theory and measurement. New York: Plenum.
- Lieberman, A. F. (1977). Preschooler's competence with a peer: Relations of attachment and peer expenses. *Child Development*, 55, 123-126.
- Lieberman, A. F. (1993). *The emotional life of the toddler*. New York: Macmillan.
- Lillard, A. S. (1993). Pretend play skills and the child's theory of mind. *Child Development*, 64, 348-371.
- Liotti, G. (1995). Disorganized/disorientated attachment in the psychotherapy of the dissociative disorders. In S. Goldberg, R. Muir & J. Kerr (Eds.), *Attachment Theory: Social, Developmental, and Clinical Perspectives*. (pp. 343-363). Hillsdale, NJ: Analytic Press, Inc.
- Luborsky, L., & Crits-Christoph, P. (1990). *Understanding Transference: The CCRT Method*. New York: Basic Books.
- Luthar, S. S., & McMahon, W. (1996). Peer reputation among inner city adolescents: Structure and correlates. *Journal of Research on Adolescence*, 6, 581-603.
- Lynch, M., & Cicchetti, D. (1991). Patterns of relatedness in maltreated and nonmaltreated children: Connections among multiple representational models. *Development and Psychopathology*, 3, 207-226.
- Lyons-Ruth, K. (1996). Attachment relationships among children with aggressive behavior problems: The role of disorganized early attachment patterns. *Journal of Consulting and Clinical Psychology*, 64, 32-40.

- Lyons-Ruth, K., Alpern, L., & Repacholi, B. (1993). Disorganized infant attachment classification and maternal psychosocial problems as predictors of hostile-aggressive behavior in the preschool classroom. *Child Development, 64*, 572-585.
- Lyons-Ruth, K., Easterbrooks, A., & Cibelli, C. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: Predictors of internalizing and externalizing problems at age 7. *Developmental Psychology, 33*, 681-692.
- Mahler, M. S., Pine, F., & Bergman, A. (1975). *The Psychological Birth of the Human Infant: Symbiosis and Individuation*. New York: Basic Books.
- Main, M. (1990). Cross-cultural studies of attachment organization: Recent studies, changing methodologies, and the concept of conditional strategies. *Human Development, 33*, 48-61.
- Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) model of attachment: Findings and directions for future research. In C. M. Parkes, J. Stevenson-Hinde & P. Marris (Eds.), *Attachment Across the Life Cycle* (pp. 127-159). London: Tavistock/Routledge.
- Main, M. (1995a). Attachment: Overview, with implications for clinical work. In S. Goldberg, R. Muir & J. Kerr (Eds.), *Attachment Theory: Social, developmental, and clinical perspectives* (pp. 407-474). Hillsdale, NJ: Analytic Press.
- Main, M. (1995b). Behavior and the Development of Representational Models of Attachment: Five Methods of Assessment : Adult Attachment Classification System. Cambridge, UK: Cambridge University Press.
- Main, M. (1995c). Recent studies in attachment: Overview, with selected implications for clinical work. In S. Goldberg, R. Muir & J. Kerr (Eds.), *Attachment Theory: Social, developmental, and clinical perspectives*. (pp. 407-474). Hillsdale, NJ: Analytic Press, Inc.
- Main, M., & Cassidy, J. (1988). Categories of response to reunion with the parent at age 6: Predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology, 24*, 415-426.
- Main, M., & Goldwyn, R. (1991). *Adult Attachment Classification System: Version 5*. Unpublished manuscript, Berkley, CA: University of California.

- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. Greenberg, D. Cicchetti & E. M. Cummings (Eds.), *Attachment in the Preschool Years: Theory, Research and Intervention* (pp. 161-182). Chicago, IL: University of Chicago Press.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), *Growing Points of Attachment Theory and Research. Monographs of the Society for Research in Child Development* (Vol. 50, pp. 66-104). Chicago, IL: Chicago University Press.
- Main, M., & Solomon, J. (1986). Discovery of an insecure-disorganized/disoriented attachment pattern. In T. B. Brazelton & M. W. Yogman (Eds.), *Affective Development in Infancy* (pp. 120-131). Westport, CT: Ablex Publishing.
- Malatesta, C. Z., Culver, C., Tesman, J. R., & Shepard, B. (1989). The development of emotion expression during the first two years of life. *Monographs of the Society for Research in Child Development*, 54, 1-104.
- Marty, P. (1968). A major process of somatization: The progressive disorganization. *International Journal of Psycho-Analysis*, 49, 246-249.
- Marvin, R. S., & Britner, B. (1999). Normative development: The ontogeny of attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: theory, Research and Clinical Applications* (pp. 44-67). New York: Guilford.
- Matas, L., Arend, R. A., & Sroufe, L. A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competent functioning. *Child Development*, 49, 547-556.
- Mayer, J., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence* (pp. 3-31). New York: Basic Books.
- McCoy, C. L., & Masters, J. C. (1985). The development of children's strategies for the social control of emotion. *Child Development*, 56, 1214-1222.
- Meins, E. (1997). *Security of Attachment and the Social Development of Cognition*. Hove, UK: Psychology Press.

- Meins, E., Fernyhough, C., Russel, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development, 7*, 1-24.
- Meins, E., Ferryhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: mother's comments on infant mental processes predict security of attachment. *Journal of Child Psychology and Psychiatry, 42*, 637-648.
- Meltzoff, A. N., & Gopnik, A. (1993). The role of imitation in understanding persons and developing a theory of mind. In S. Baron-Cohen, H. Tager-Flusberg & D. Cohen (Eds.), *Understanding Other Minds: Perspectives from Autism* (pp. 335-366). New York: Oxford University Press, Inc.
- Meltzoff, A. N., & Moore, M. K. (1977). Imitation of facial and manual gestures by human neonates. *Science, 198*, 75-78.
- Meltzoff, A. N., & Moore, M. K. (1983a). Newborn infants imitate adult facial gestures. *Child Development, 54*, 702-709.
- Meltzoff, A. N., & Moore, M. K. (1983b). The origins of imitation in infancy: Paradigm, phenomena and theories. In L. P. Lipsitt (Ed.), *Advances in Infancy Research* (Norwood, NJ: Ablex.
- Meltzoff, A. N., & Moore, M. K. (1989). Imitation in newborn infants: Exploring the range of gestures imitated and the underlying mechanisms. *Developmental Psychology, 25*, 954-962.
- Messick, S. (1983). Assessment of Children. In P. Mussen (Ed.), *Handbook of Child Psychology: Vol 1. History, theory and methods (4 th ed)*. New York: Wiley.
- Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalising antisocial behaviour. *Psychological Bulletin, 103*, 324-344.
- Mitchell, P., & Isaacs, J. E. (1994). Understanding of verbal representations in children with autism: The case of referential opacity. *British Journal of Developmental Psychology, 12*, 439-454.
- Morton, J. (1989). The origins of autism. *New Scientist, 1964*, 44-47.
- Morton, J., & Frith, U. (1995). Causal modelling: A structural approach to developmental psychology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology. Vol. 1: Theory and methods* (pp. 357-390). New York: John Wiley.

- Moss, E., Parent, S., & Gosselin, C. (1995). *Attachment and theory of mind: Cognitive and metacognitive correlates of attachment during the preschool period*. Paper presented at the Biennial meeting of the Society for Research in Child Development, Indianapolis: Indiana.
- Moss, E., Parent, S., Gosselin, C., Rousseau, D., & St-Laurent, D. (1996). Attachment and teacher-reported behavior problems during the preschool and early school-age period. *Development and Psychopathology*, 8, 511-525.
- Moss, E., & St-Laurent, D. (1999). Disorganized attachment and developmental risk at school age. In J. Solomon & C. George (Eds.), *Attachment Disorganization* (pp. 338-428). New York: The Guilford Press.
- Moss, H. B., Talagala, S. L., & Kirisci, L. (1997). Attachment and joint problem-solving experiences during the preschool period. *Social Development*, 6(1), 1-17.
- Murphy, K. R., & Davidshofer, C. O. (2001). *Psychological Testing (5 th edition)*. Upper Saddle River, N.J.: Prentice Hall.
- Nachmias, M., Gunnar, M. R., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: Moderating role of attachment security. *Child Development*, 67, 508-522.
- Neisser, U. (1991). Two perceptually given aspects of the self and their development. *Developmental Review*, 11, 197-209.
- Nelson, K. (1993). Explaining the emergence of autobiographical memory in early childhood. In A. Collins, S. E. Gathercole, M. A. Conway & P. E. Morris (Eds.), *Theories of Memory* (pp. 355-385). Hove, U.K.: Erlbaum.
- Oandasan, C., L. (1999). Reflective Functioning in the Latency Period: An Exploratory Study using a New Measure - The Child Reflective Functioning Scale. Unpublished MSc in Psychoanalytic Developmental Psychology, Anna Freud Centre and University College London, London, UK.
- O'Connor, T. G., Rutter, M., & Kreppner, J. (2000). The effects of global severe privation of cognitive competence: extension and longitudinal follow-up. *Child Development*, 71(2), 376-390.
- Paget, K. (1982). Intellectual patterns of conduct problem children on the WISC-R. *Psychology in the Schools*, 19, 439-445.

- Pancake, V. (1985). *Continuity between mother-infant attachment and ongoing dyadic peer relationships in preschool*. Paper presented at the Biennial meeting of the Society for Research in Child Development, Toronto, ON: Canada.
- Park, K. A., & Waters, E. (1989). Security of attachment and preschool friendships. *Child Development*, 60, 1076-1081.
- Parke, R. D., Cassidy, J., Burks, V. M., Carson, J. L., & Boyum, L. (1992). Familial contribution to peer competence among young children: The role of interactive and affective processes. In R. D. Parke & G. W. Ladd (Eds.), *Family-peer relationships: Modes of linkage* (pp. 107-134). Hillsdale, NJ: Erlbaum.
- Peng, M., Johnson, C. N., Pollock, J., Glasspool, R., & Harris, P. L. (1992). Training young children to acknowledge mixed emotions. *Cognition and Emotion*, 6, 387-401.
- Perner, J. (1991a). On representing that; the asymmetry between belief and desire in children's theory of mind. In D. Frye & C. Moore (Eds.), *Children's Theories of Mind* (pp. 139-155). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Perner, J. (1991b). *Understanding the Representational Mind*. Cambridge, Mass: MIT Press.
- Perner, J., & Lang, B. (2000). Theory of mind and executive function: Is there a developmental relationship? In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 150-181). Oxford, UK: Oxford University Press.
- Perner, J., Leekam, S. R., & Wimmer, H. (1987). Three-year-olds' difficulty in understanding false-belief: Cognitive limitation, lack of knowledge, or pragmatic misunderstanding? *British Journal of Developmental Psychology*, 5, 125-137.
- Perner, J., Ruffman, T., & Leekman, S. R. (1994). Theory of mind is contagious: You catch it from your sibs. *Child Development*, 65, 1228-1238.
- Piaget, J. (1967/1972). *Biology and Knowledge*. Chicago, IL: University of Chicago Press.
- Pianta, R. C., Egeland, B., & Adam, E. M. (1996). Adult attachment classification and self-reported psychiatric symptomatology as assessed by the Minnesota Multiphasic Personality Inventory. *Journal of Consulting and Clinical Psychology*, 64, 273-281.



- Pianta, R. C., Marvin, R. S., Britner, B., & Borowitz, K. (1996). Mother's resolution of their children's diagnosis: Organised patterns of caregiving representations. *Infant Mental Health Journal*, 17, 239-256.
- Plotkin, H. (1998). *Evolution in Mind: An Introduction to Evolutionary Psychology*. Cambridge, MA: Harvard University Press.
- Plotsky, P. M., & Meaney, M. J. (1993). Early, postnatal experience alters hypothalamic corticotropin-releasing factor (CRF) mRNA, median eminence CRF content and stress-induced release in adult rats. *Brain Research. Molecular Brain Research*, 18, 195-200.
- Posner, M. I., & Rothbart, M. K. (2000). Developing mechanisms of self-regulation. *Development and Psychopathology*, 12, 427-441.
- Pratt, C., & Bryant, P. E. (1990). Young children understand that looking leads to knowing (so long as they are looking into a single barrel). *Child Development*, 61, 973-982.
- Premack, D. (1990). The infant's theory of self-propelled objects. *Cognition*, 36, 1-16.
- Premack, D., & Premack, A. J. (1995). Intention as psychological causes. In D. Sperber, D. Premack & A. J. Premack (Eds.), *Causal Cognition: A Multidisciplinary Debate*. (pp. 185-199). Oxford, UK: Oxford University Press.
- Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a 'theory of mind'? *Behavioural and Brain Sciences*, 1, 515-526.
- Pylyshyn, Z. W. (1978). When is attribution of belief justified? *Behavioural and Brain Sciences*, 1, 592-593.
- Quist, R. M., & Matshazi, D. G. M. (2000). The Child and Adolescent Functional Assessment Scale (CAFAS): A dynamic predictor of juvenile recidivism. *Adolescence*, 35(137), 181-192.
- Radojevic, M. (1994). Mental representations and attachment amongst prospective Australian fathers. *Australian and New Zealand Journal of Psychiatry*, 28, 505-511.
- Reese, E., Haden, C. A., & Fivush, R. (1993). Mother-child conversations about the past. *Cognitive Development*, 8, 12-21.

- Renken, B., Egeland, B., Marvinney, D., Mangelsdorf, S., & Sroufe, L. A. (1989). Early childhood antecedents of aggression and passive-withdrawal in early elementary school. *Journal of Personality*, 57, 257-281.
- Repacholi, B. M., & Gopnik, A. (1997). Early reasoning about desires: Evidence from 14- and 18-month-olds. *Developmental Psychology*, 33, 12-21.
- Ricks, D. (1989). Mind-reading, emotion understanding, and relationships. *Journal of the National Institute of Mental Health and Neurosciences*, 7(1), 65-70.
- Richters, J. E., & Cicchetti, D. (1993). Mark Twain meets DSM-III-R: Conduct disorder, development and the concept of harmful dysfunction. *Development and Psychopathology*, 5, 5-29.
- Rogosch, F. A., Cicchetti, D., & Aber, J. L. (1995). The role of child maltreatment in early deviations in cognitive and affective processing abilities and later peer relationship problems. *Development and Psychopathology*, 7(4), 591-609.
- Ruffman, T., Perner, J., Naito, M., Parkin, L., & Clements, W. (1998). Older (but not younger) siblings facilitate false-belief understanding. *Developmental Psychology*, 34, 161-174.
- Russell, J. A. (1991). Culture and the categorization of emotion. *Psychological Bulletin*, 110, 426-450.
- Russell, J. A., & Paris, F. A. (1994). Do children acquire concepts of complex emotions abruptly? *International Journal of Behavioral Development*, 17, 349-365.
- Rutter, M., & Madge, N. (1976). *Cycles of Disadvantage: A Review of Research*. London: Heinemann Educational.
- Rutter, M., Quinton, D., & Liddle, C. (1983). Parenting in two generations: Looking backwards and looking forwards. In N. Madge (Ed.), *Families at Risk* (pp. 60-98). London: Heinemann Educational.
- Saarni, C. (1999). *The Development of Emotional Experience*. New York: The Guildford Press.
- Sagi, A., van IJzendoorn, M. H., Scharf, M., Koren-Karie, N., Joels, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, 30, 771-777.

- Sameroff, A. J., & Chandler, M. J. (1975). Reproductive risk and the continuum of caretaking causality. In F.D.Horowitz (Ed.), *Review of child development research* (pp. 187-244). Chicago, IL: University of Chicago Press.
- Sapolsky, R. M. (1996). Why stress is bad for your brain. *Science*, 273, 749-750.
- Schmidt, F. L., Hunter, J. E., & Pearlman, K. (1981). Task differences as moderators of aptitude test validity in selection: A red herring. *Journal of Applied Psychology*, 66, 166-185.
- Schonfeld, I. S., Shaffer, D., O'Connor, P., & Portnoy, S. (1988). Conduct disorder and cognitive functioning: Testing three causal hypotheses. *Child Development*, 59, 993-1007.
- Seja, A. L., & Russ, S. W. (2001). Emotion in children's play and creative problem solving. *Creativity Research Journal*, 13(2), 211-219.
- Seligman, M. E., & Peterson, C. C. (1986). A learned helplessness perspective on childhood depression: Theory and research. In M. Rutter, C. E. Izard & P. Read (Eds.), *Depression in Young People: Developmental and Clinical Perspectives* (pp. 223-249). New York: Guilford Press.
- Semel, E., Wiig, E. H., & Secord, W. A. (1987). The Clinical Evaluation of Language Fundamentals-Revised. San Antonio, Texas: The Psychological Corporation.
- Shaffer, D. (1985). Depression, Mania and Suicidal Acts. In M. Rutter & L. Hersov (Eds.), *Child and Adolescent Psychiatry (2nd edition)*. Oxford, UK.: Blackwell.
- Shand, P. X. (1996). Children's understanding of other minds: the development of Theory of Mind measures for use with 7 to 10 year-olds. Unpublished Master's Thesis, University College London, London, UK.
- Shaw, D. S., Owens, E. B., Vondra, J. I., Keenan, K., & Winslow, E. B. (1996). Early risk factors and pathways in the development of early disruptive behavior problems. *Development and Psychopathology*, 8, 679-699.
- Shaw, D. S., & Vondra, J. I. (1995). Infant attachment security and maternal predictors of early behavior problems: A longitudinal study of low-income families. *Journal of Abnormal Child Psychology*, 23, 335-357.
- Shields, A. M., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Developmental Psychology*, 33(6), 906-916.

- Shipman, K., Zeman, J., Penza, S., & Champion, K. (2000). Emotion management skills in sexually maltreated and nonmaltreated girls: A developmental psychopathology perspective. *Development and Psychopathology*, 12(1), 47-62.
- Shipman, K. L., & Zeman, J. (1999). Emotional understanding: A comparison of physically maltreating and nonmaltreating mother-child dyads. *Journal of Clinical Child Psychology*, 28(3), 407-417.
- Shmueli-Goetz, Y. (2001). *The Childhood Attachment Interview: Development and Validation*. Unpublished Doctoral in Philosophy, University College London, London, UK.
- Siegel, D. J. (1999). *The Developing Mind*. New York: The Guilford Press.
- Sigman, M., & Ruskin, E. (1999). Continuity and change in the social competence of children with autism, Down syndrome, and developmental delays. In *Monographs of the Society for Research in Child Development* (Vol. 64, pp. v-114). Blackwell Publishers.
- Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety provoking situation: The role of attachment styles. *Journal of Personality and Social Psychology*, 60, 434-446.
- Slade, A. (1987). Quality of attachment and early symbolic play. *Developmental Psychology*, 17, 326-335.
- Slade, A. (1994). Making meaning and making believe: Their role in the clinical process. In A. Slade & D. P. Worf (Eds.), *Children at Play* (pp. 81-107). New York: Oxford University Press.
- Slade, A., Belsky, J., Aber, J. L., & Phelps, J. L. (1999). Mothers' representations of their relationships with their toddlers: Links to adult attachment and observed mothering. *Developmental Psychology*, 35(3), 611-619.
- Slomkowski, C., & Dunn, J. (1992). Arguments and relationships within the family: Differences in children's disputes with mother and sibling. *Developmental Psychology*, 28, 919-924.
- Smith, M., & Walden, T. (1999). Understanding feelings and coping with emotional situations: A comparison of maltreated and nonmaltreated preschoolers. *Social Development*, 8(1), 93-116.

- Smith, M., & Walden, T. (2001). An exploration of African American preschool-aged children's behavioral regulation in emotionally arousing situations. *Child Study Journal*, 31(1), 13-45.
- Sodian, B., & Frith, U. (1992). Deception and sabotage in autistic, retarded and normal children. *Journal of Child Psychology and Psychiatry*, 33, 591-606.
- Solomon, J., & George, C. (1999). *Attachment Disorganization*. New York: The Guilford Press.
- Solomon, J., George, C., & Dejong, A. (1995). Children classified as controlling at age six: Evidence of disorganized representational strategies and aggression at home and at school. *Development and Psychopathology*, 7, 447-463.
- Sorce, J. F., Emde, R. N., Campos, J., & Klinnert, M. D. (2000). Maternal emotional signaling: Its effect on the visual cliff behavior of 1-year-olds. In D. Muir & A. Slater (Eds.), *Infant development: Essential readings in development psychology* (pp. 282-292). Malden, MA: Blackwell Publishers.
- Spangler, G., & Grossman, K. E. (1993). Biobehavioral organization in securely and insecurely attached infants. *Child Development*, 64, 1439-1450.
- Spelke, E. S., Phillips, A., & Woodward, A. L. (1995). Infant's knowledge of object motion and human action. In D. Sperber, D. Premack & A. J. Premack (Eds.), *Causal Cognition: A Multidisciplinary Debate* (pp. 44-78). Oxford, UK: Oxford University Press.
- Spielberger, C. D. (1973). Preliminary Test Manual for the State-Trait Anxiety Inventory for Children. Unpublished manuscript, Tampa, Florida.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *The State-Trait Anxiety Inventory : Self-Evaluation Questionnaire*. Palo Alto, CA: Consulting Psychologists Press.
- Sroufe, L. A. (1983). Infant-caregiver attachment and patterns of adaptation in preschool: The roots of maladaptation and competence (Vol. 16). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Sroufe, L. A. (1988). The role of infant-caregiver attachment in development. In J. Belsky & T. Nezworski (Eds.), *Clinical Implications of Attachment* (pp. 18-38). Hillsdale, NJ: Lawrence Erlbaum Associates.

- Sroufe, L. A. (1996). *Emotional Development: The Organization of Emotional Life in the Early Years*. New York: Cambridge University Press.
- Sroufe, L. A., Egeland, B., & Carlson, E. A. (1999). The nature of individual differences in infant-caregiver attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 68-88). New York: The Guilford Press.
- Steele, H., Steele, M., Croft, C., & Fonagy, P. (1999). Infant-mother attachment at one year predicts children's understanding of mixed emotions at six years. *Social Development*, 8, 161-174.
- Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classifications of mothers, fathers, and their infants. *Child Development*, 67, 541-555.
- Steiner, N., & Levine, L. (1990). Making sense of emotion: the representation and use of goal-structured knowledge. In N. Stein, T. Leventhal & T. Trabasso (Eds.), *Psychological and Biological Approaches to Emotion* (pp. 45-74). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Stenberg, C. R., Campos, J. J., & Emde, R. N. (1983). The facial expression of anger in seven-month-old infants. *Child Development*, 54(1), 178-184.
- Stern, D. N. (1984). Affect attunement. In J. D. Call, E. Galenson. & R. L. Tyson (Eds.), *Frontiers of Infant Psychiatry* (Vol. 2, pp. 3-14). New York: Basic Books.
- Stern, D. N. (1985). *The Interpersonal World of the Infant: A View from Psychoanalysis and Developmental Psychology*. New York: Basic Books.
- Stone, V. E., Baron-Cohen, S., & Knight, R. T. (1998). Frontal lobe contributions to theory of mind. *Journal of Cognitive Neuroscience*, 10(5), 640-656.
- Strayer, J. (1986). Children's attributions regarding the emotional determinants of emotion in self and others. *Developmental Psychology*, 64, 188-210.
- Strayer, J. (1989). What children know and feel in response to witnessing affective events. In C. Saarni & P. Harris (Eds.), *Children's understanding of emotion* (pp. 259-292). New York: Cambridge University Press.
- Strayer, J., & Schroeder, M. (1989). Children's empathy and role taking: Child and parental factors, and relations to prosocial behavior. *Journal of Applied Developmental Psychology*, 10(2), 227-239.

- Suomi, S. J. (1995). Influence of attachment theory on ethological studies of biobehavioural development in nonhuman primates. In S. Goldberg, R. Muir & J. Kerr (Eds.), *Attachment Theory: Social, Developmental and Clinical Perspectives* (pp. 185-230). New Jersey: Analytic Press.
- Tager-Flusberg, H. (1996). Current theory and research on language and communication in autism. *Journal of Autism and Developmental Disorders*, 26, 169-172.
- Tager-Flusberg, H. (2000). Language and understanding minds: Connections in autism. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 124-149). Oxford. UK: Oxford University Press.
- Tager-Flusberg, H., Sullivan, K., & Boshart, J. (1997). Executive functions and performance on false-belief tasks. *Developmental Neuropsychology*, 13, 487-493.
- Target, M., & Fonagy, P. (1996). Playing with reality II: The development of psychic reality from a theoretical perspective. *International Journal of Psycho-Analysis*, 77, 459-479.
- Target, M., Fonagy, P., Shmueli-Goetz, Y., Schneider, T., & Datta, A. (2000). *Child Attachment Interview (CAI) : Coding and Classification Manual, Version III*. Unpublished manuscript, London, UK : University College London.
- Target, M., Oandasan, C., L, & Ensink, K. (2001). *Child Reflective Functioning Coding Manual*. Unpublished manuscript, London, UK: University College London.
- Teti, D. M., & Ablard, K. E. (1989). Security of attachment and infant-sibling relationships: A laboratory study. *Child Development*, 60, 1519-1528.
- Thompson, R. A. (1989). Causal attributions and children's emotional understanding. In C. Saarni & P. Harris (Eds.), *Children's understanding of emotion* (pp. 117-150). New York: Cambridge University Press.
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development*, 59, 25-52.
- Thompson, R. A. (1999). Early attachment and later development. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 265-286). New York: The Guilford Press.
- Thompson, R. J., Gil, K. M., Burbach, D. J., Keith, B. R., & Kinney, T. R. (1993). Role of child and maternal processes in the psychological adjustment of children with sickle cell disease. *Journal of Consulting and Clinical Psychology*, 61, 468-474.

- Thorndike, E. L. (1911). *Animal Intelligence*. New York: Macmillan.
- Thorndike, E. L. (1936). Factor analysis of social and abstract intelligence. *Journal of Educational Psychology*, 27, 231-233.
- Tizard, B., & Hughes, M. (1984). *Young children learning*. London, UK: Fontana.
- Tomasello, M. (1995). Joint attention as social cognition. In C. Moore & P. Dunham (Eds.), *Joint Attention: Its Origins and Role in Development* (pp. 103-130). New York: Lawrence Erlbaum.
- Tomkins, S. S. (1981). The quest for primary motives: Biography and autobiography of an idea. *Journal of Personality and Social Psychology*, 41, 306-329.
- Trevarthen, C. (1979). Communication and cooperation in early infancy: A description of primary intersubjectivity. In M. M. Bullowa (Ed.), *Before Speech: The Beginning of Interpersonal Communication* (pp. 321-347). New York: Cambridge University Press.
- Trevarthen, C. (1980). The foundations of intersubjectivity: Development of interpersonal and cooperative understanding in infants. In D. R. Olson (Ed.), *The Social Foundations of Language and Thought: Essays in Honor of Jerome Bruner* (New York: W.W. Norton).
- Trevarthen, C. (1998). The concept and foundations of infant intersubjectivity. In S. Braten (Ed.), *Intersubjective communication and emotion in early ontogeny. Studies in emotion and social interaction* (2<sup>nd</sup> series ed., pp. 15-46). New York: Cambridge University Press.
- Tronick, E. Z. (1989). Emotions and emotional communication in infants. *American Psychologist*, 44, 112-119.
- Tronick, E. Z., Als, H., Adamson, L., Wise, S., & Brazelton, T. (1978). The infant's response to entrapment between contradictory messages in face-to-face interaction. *Journal of Child Psychiatry*, 17, 1-13.
- Tronick, E. Z., & Cohn, J. F. (1989). Infant-mother face-to-face interaction: Age and gender differences in coordination and the occurrence of miscoordination. *Child Development*, 60, 85-92.
- Tronick, E. Z., & Gianino, A. F. (1986). The transmission of maternal disturbance to the infant. In E. Z. Tronick & T. Field (Eds.), *Maternal Depression and Infant Disturbance* (pp. 5-11). San Francisco: Jossey Bass.



- Tulving, E. (1983). *Elements of Episodic Memory*. New York: Oxford University Press.
- Turrell, G., Lynch, J. W., Kaplan, G. A., Everson, S. A., Helkala, E. L., Kauhanen, J., & Salonen, J. T. (2002). Socioeconomic position across the lifecourse and cognitive function in late middle age. *Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 57(1), 43-51.
- Underwood, M. K. (1997). Top ten pressing questions about the development of emotion regulation. *Motivation and Emotion*, 21(1), 127-146.
- Vaillant, G. E. (1992). *Ego mechanisms of defense: A guide for clinicians and researchers*. Washington, DC: American Psychiatric Association Press.
- van Geert, P. (1999). Vygotsky's dynamic systems. In P. Lloyd & C. Fernyhough (Eds.), *Lev Vygotsky: Critical Assessments: Future Directions* (Vol. 4, pp. 3-21). Florence, KY, US: Taylor & Francis/Routledge.
- van IJzendoorn, M. H. (1992). Intergenerational transmission of parenting: A review of studies in non-clinical populations. *Developmental Review*, 12, 76-99.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 387-403.
- van IJzendoorn, M. H., Juffer, F., & Duyvesteyn, M. G. C. (1995). Breaking the intergenerational cycle of insecure attachment: A review of the effects of attachment-based interventions on maternal sensitivity and infant security. *Journal of Child Psychology and Psychiatry*, 36, 225-248.
- van IJzendoorn, M. H., Schuengel, C., & Bakerman-Kranenberg, M. J. (1999). Disorganised attachment in early childhood: Meta-Analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, 11(2), 225-249.
- Vaughn, B. E., & Bost, K. K. (1999). Attachment and temperament. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment* (pp. 198-225). New York: The Guilford Press.
- Vernon, P. E., & Parry, J. B. (1942). *Personnel Selection in the British Forces*.: University of London.
- Verscheuren, K., & Marcoen, A. (1999). Representation of self and socio-emotional competence in kindergartners: Differential and combined effects of attachment to mother and to father. *Child Development*, 70(1), 183-201.

- Volling, B. L., & Belsky, J. (1992). The contribution of mother-child and father-child relationships to the quality of sibling interaction: A longitudinal study. *Child Development, 63*, 1209-1222.
- Vygotsky, L. S. (1967). Play and its role in the mental development of the child. *Soviet Psychology, 5*, 6-18.
- Walden, T. A., & Smith, M. (1997). Emotion regulation. *Motivation and Emotion, 21*, 7-25.
- Walker, A. S. (1982). Intermodal perception of expressive behaviour by human infants. *Journal of Experimental Child Psychology, 33*, 514-535.
- Ward, M. J., & Carlson, E. A. (1995). Associations among adult attachment representations, maternal sensitivity, and infant-mother attachment in a sample of adolescent mothers. *Child Development, 66*, 69-79.
- Warren, S. L., Huston, L., Egeland, B., & Sroufe, L. A. (1997). Child and adolescent anxiety disorders and early attachment. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 637-644.
- Wartner, U. G., Grossman, K., Fremmer-Bombrik, E., & Suess, G. (1994). Attachment patterns at age six in South Germany: Predictability from infancy and implications for pre-school behaviour. *Child Development, 65*, 1014-1027.
- Watson, J. B. (1930). *Behaviorism* (rev. ed.). New York: Norton.
- Watson, J. S. (1972). Smiling, cooing, and 'the game'. *Merrill-Palmer Quarterly, 18*, 323-339.
- Wechsler, D. (1991). *Wechsler Intelligence Scale for Children—Third Edition*. San Antonio, TX: The Psychological Corporation.
- Weinfield, N. S., Sroufe, L. A., Egeland, B., & Carlson, C. R. (1999). The nature of individual differences in infant-caregiver attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of Attachment: Theory, Research and Clinical Applications* (pp. 68-88). New York: The Guilford Press.
- Wellman, H. M. (1990). *The Child's Theory of Mind*. Cambridge, Mass: Bradford Books/MIT Press.
- Wellman, H. M. (1993). Early understanding of mind: The normal case. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds: Perspectives from Autism* (pp. 40-58). New York: Oxford University Press.

- Wellman, H. M., & Bartsch, K. (1988). Young children's reasoning about beliefs. *Cognition*, 30(3), 239-277.
- Wellman, H. M., & Bartsch, K. (1989). Three-year-olds understand belief: A reply to Perner. *Cognition*, 33(3), 321-326.
- Wellman, H. M., & Estes, D. (1986). Early understanding of mental entities: A re-examination of childhood realism. *Child Development*, 57, 910-923.
- Wellman, H. M., & Lagattuta, K. H. (2000). Developing understandings of mind. In S. Baron-Cohen, H. Tager-Flusberg & D. J. Cohen (Eds.), *Understanding Other Minds* (pp. 45-72). London, UK: Oxford University Press.
- Wellman, H. M., & Phillips, A. T. (2001). Developing intentional understandings. In B. F. Malle, L. J. Moses & D. Baldwin (Eds.), *Intentions and Intentionality: Foundations of Social Cognition* (pp. 125-148). Cambridge, MA: The MIT Press.
- Wellman, H. M., & Woolley, J. D. (1990). From simple desires to ordinary beliefs: The early development of everyday psychology. *Cognition*, 35(3), 245-275.
- Wellman, H. M., Harris, P. L., Banerjee, M., & Sinclair, A. (1995). Early understanding of emotion: Evidence from natural language. *Cognition and Emotion*, 9(23), 117-149.
- Welsh, M. C., Pennington, B. F., & Groisser, D. B. (1991). A normative-developmental study of executive function: A window on prefrontal function in children. *Developmental Neuropsychology*, 7, 131-149.
- Westen, D., Feit, A., & Zittel, C. (1999). Methodological Issues in Research Using Projective Methods. In P. C. Kendall & J. N. Butcher (Eds.), *Handbook of Research Methods in Clinical Psychology (2nd edition)* (pp. 224-241). New York: John Wiley.
- White, J. L., Moffit, T. E., & Silva, P. A. (1989). A prospective replication of the protective effects in IQ in subjects at high risk for juvenile delinquency. *Journal of Consulting and Clinical Psychology*, 57, 719-724.
- Whiten, A. (1991). *Natural Theories of Mind*. Oxford, UK: Basil Blackwell.
- Whiten, A. (1994). Grades of Mindreading. In C. Lewis & P. Mitchell (Eds.), *Children's Early Understanding of Mind* (pp. 370-395). Hove, England: Lawrence Erlbaum Associates.

- Wimmer, H., & Hartl, M. (1991). The Cartesian view and the theory view of mind: Developmental evidence from understanding false-belief in self and other. *British Journal of Developmental Psychology*, 9, 125-128.
- Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103-128.
- Wing, J. K., Mann, S. A., Leff, J. P., & Nixon, J. P. (1978). The concept of a case in psychiatric population surveys. *Psychological Medicine*, 8, 203-217.
- Winnicott, D. W. (1956). Mirror role of mother and family in child development. In D. W. Winnicott (Ed.), *Playing and reality* (pp. 111-118). London: Tavistock Clinic.
- Winnicott, D. W. (1960). The theory of the parent-infant relationship. *International Journal of Psycho-Analysis*, 41, 585-595.
- Winnicott, D. W. (1967). Mirror-role of the mother and family in child development. In P. Lomas (Ed.), *The Predicament of the Family: A Psycho-Analytical Symposium* (pp. 26-33). London: Hogarth Press.
- Winnicott, D. W. (1971). *Playing and Reality*. London: Tavistock Clinic.
- Winograd, T. (1975). Frame representations and the procedural-declarative controversy. In D. Bobrow & A. Collins (Eds.), *Representations and understanding: Studies in cognitive science*. (pp. 185-210). New York: Academic Press.
- Wintre, M., & Vallance, D. D. (1994). A developmental sequence in the comprehension of emotions: Multiple emotions, intensity and valence. *Developmental Psychology*, 30, 509-514.
- Wolf, D. P. (1990). Being of several minds: Voices and versions of the self in early childhood. In D. Cicchetti & M. Beeghly (Eds.), *The Self in Transition: Infancy to Childhood* (pp. 183-212). Chicago: University of Chicago Press.
- Wong, C. M. T., Day, J. D., Maxwell, S. E., & Meara, N. M. (1995). A multitrait multimethod study of academic and social intelligence in college students. *Journal of Educational Psychology*, 87(1), 117-133.
- Woodworth, S. (1993). *A funny thing about social cognition*. Paper presented at the Society for Research in Child Development, New Orleans.
- Wundt, W. (1916). *Elements of Folk Psychology: Outlines of a Psychological History of Mankind*. London, UK: Allen & Unwin.

- Youngblade, L. M., & Dunn, J. (1995). Individual differences in young children's pretend play with mother and sibling: Links to relationships and understanding of other people's feelings and beliefs. *Child Development*, 66, 1472-1492.
- Youngblade, L. M., & Belsky, J. (1992). Parent-child antecedents of 5-year-olds' friendships: A longitudinal analysis. *Developmental Psychology*, 28, 700-713.
- Zahn-Waxler, C., Cole, P., & Barrett, K. C. (1991). Guilt and empathy: Sex differences and implications for the development of depression. In J. Garber & K. Dodge (Eds.), *The Development of Emotion Regulation and Dysregulation* (pp. 243-272). Cambridge: Cambridge University Press.
- Zahn-Waxler, C., Cummings, E. M., McKnew, D., & Radke-Yarrow, M. (1984). Altruism, aggression and social interactions in young children with a manic-depressive parent. *Child Development*, 55, 112-122.
- Zahn-Waxler, C., Kochanska, G., Krupnick, J., & McKnew, D. (1990). Patterns of guilt in children of depressed and well mothers. *Developmental Psychology*, 26(1), 51-59.
- Zahn-Waxler, C., Mayfield, A., Radke-Yarrow, M., McKnew, D., Cytryn, L., & Davenport, Y. (1988). A follow-up investigation of offspring of bipolar parents. *American Journal of Psychiatry*, 145, 506-509.
- Zahn-Waxler, C., Radke-Yarrow, M., & King, R. (1983). Early altruism and guilt. *Academic Psychology Bulletin*, 5(2), 247-259.
- Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology*, 28, 126-136.
- Zajonc, R. B. (1984). On the primacy of affect. *American Psychologist*, 39, 117-123.

**APPENDIX A1**  
**RESEARCH INFORMATION: PARENT**

CAMDEN & ISLINGTON / UNIVERSITY COLLEGE LONDON RESEARCH STUDY**RESEARCH INFORMATION: PARENT****The Study's Purpose:**

The purpose of this study is to understand child development and change. The tasks you and your child are invited to participate in will increase our knowledge of problems children are referred for and how they change following therapy. We will be able to share with you the overall results of the project as they become clear to us, if you would like us to.

**What the Study Involves:**

**For you:** You will be asked to complete questionnaires and to participate in interviews about your child's behaviour and general milestones, as well as be interviewed about aspects of your own childhood and development. This will take approximately five hours in total, completed over two or three sessions. We would be able to meet you and your child at the same time or separately, at our research facilities in Hampstead, or in your own home.

**For your child:** Most of these tasks are fun and administered in the manner of play. There are stories that will need to be completed using toys, stories with pictures needing matching faces as well as some self-administered questionnaires. There are two interviews about how the child is able to think about significant relationships, with friends and family respectively. These tasks should take approximately five to six hours in total, completed over three sessions.

**Participation:**

Although we hope that you and your child will help us in carrying out the project, you are under no obligation to do so and are of course free to withdraw from the study at any time for any unstated reason. Your decision on whether or not to take part, or not to continue, will not affect your child's care in any way. However, we are hoping to follow a group of children over three years, to look at change over time, and would greatly appreciate those families who feel able to stay involved for follow-up appointments.

**Confidentiality:**

Written records of all research appointments will be kept securely and anonymously, identified by serial numbers. Apart from exceptional cases, where the child might reveal that they are in danger (either in a dangerous situation, or a danger to themselves) so that it would be our responsibility to act appropriately in the interest of the child's safety, the confidentiality will be strictly observed. Three of the tasks with your child will need to be video-taped, and two interviews with your self will need to be tape-recorded and in these cases, the material will be stored very securely without names. Apart from being the basis of some ratings for the project, they may also be used for research training purposes within the project. Publication of results will be based on statistical descriptions of groups, and not involve disclosure of individual or identifiable information.

**The Research Team can answer any problems or queries, please contact  
Karin Ensink on 020 794 2313**

*\*\* All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Camden & Islington Community Health Services NHS Trust on the Ethics of Human Research as well as the Joint UCL / UCLH Committees on the Ethics of Human Research: Committee Alpha \*\**

**APPENDIX A2****RESEARCH INFORMATION: CHILD**



Camden & Islington / University College London Research Study  
**RESEARCH INFORMATION: CHILD**

### **Why Are You Doing This Study?**

We would like to know more about people like you, and the only way to find out is to ask.

### **What Will I Be Asked About? What Will I Have To Do?**

You will be asked to do a number of different things, including :

- a) Be asked about your friendships and your family;
- b) Listen to stories and use toys to make up the endings;
- c) Listen to stories with pictures and put matching faces on the people in the stories;
- d) Fill in questionnaires about how you feel and what you think.

We will also be seeing the person who looks after you, to ask them a few questions. But primarily, we are interested in what you have to say.

### **How Long Will It Take To Do This? Where Will I Do It?**

It will take about five to six hours to complete all of the above games. You and your parents will decide where you want to do this.

### **What If I Don't Want to Join or Change My Mind?**

Whatever you decide to do will not affect your care at the Clinic, even if you decide later you don't want to be part of the project any more. If you find anything distressing or you change your mind in the middle, just tell us and you can stop. It is no problem, and you wouldn't need to tell us why.

### **Will Anyone Else Know What I Say?**

Everything you do and say will be kept anonymously and confidentially - that means no one will know it is you - we use numbers and not your real names. Also, everything is kept locked away so no one can get to them.

*\*\* All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Camden & Islington Community Health Services NHS Trust on the Ethics of Human Research as well as the Joint UCL / UCLH Committees on the Ethics of Human Research: Committee Alpha \*\**

**APPENDIX A3**  
**CONFIDENTIALITY AGREEMENT**

### **Confidentiality Agreement**

I understand that, in having access to the Anna Freud Centre's files, research tapes, and case meetings, I am completely responsible for safeguarding the information that I am working with. This means that I will not discuss any of the confidential information disclosed to me with anyone, under any circumstances, and that I will not remove any confidential documents or material from the Centre. In working at the Centre, I will take all measures to uphold the standards of confidentiality set by the research staff, inclusive of using all techniques to disguise the names of individuals being tested here.

Should I come across personal information relating to somebody whom I know or would be likely to have dealings with, I will avoid reading or viewing it, and will inform Karin Ensink of the connection.

I realise that these restrictions are essential to protect the privacy of patients and research participants who have trusted the Centre to do this, and that the restrictions continue even after I have completed my work here at the Centre.

Print name:

Signature:

Date:

Witness:

Date:

**APPENDIX A4**  
**CHILD CONSENT FORM**

**C O N F I D E N T I A L****University College London****CHILD CONSENT FORM****CONSENT TO PARTICIPATE IN RESEARCH STUDY**

**I (name of Child)** .....

**of (school)** .....

.....

agree to take part in the research project by the University of London.

I have been told what the Study is about and/or I have read the information sheet about this study which explains what I have to do. I have asked any questions I might have.

I understand that taking part in this project is not related to my treatment in any way.

I know that at any time I may decide not to continue if I do not want to.

**Signed** ..... **Date** .....

**Witnessed by** ..... **Date** .....

**INVESTIGATOR'S STATEMENT**

I have explained the nature, demands and foreseeable risks of the above research to the subject.

**Name** ..... **Position** .....

**Signed by** ..... **Date** .....

**APPENDIX B1**

**STRANGE STORIES ADMINISTRATION MANUAL**

*Strange Stories Administration Manual*

**Selection of Happe's Strange Stories<sup>1</sup>  
used by Anna Freud Centre  
Standardisation Study Research Team**

The Anna Freud Centre/University College London  
21 Maresfield Gardens, London NW3 5SD, UK

Under direction of Mary Target and Peter Fonagy.

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<sup>1</sup> Happe, F. G. E. (1994) An Advanced Test of Theory of Mind: Understanding of story character's thoughts and feelings by able autistic, mentally handicapped and normal children and adults. *Journal of Autism and Developmental Disorders*. Vol 24, 129-54.

## Banana

Katie and Emma are playing in the house.

Emma picks up a banana from the fruit bowl and holds it up to her ear.

She says to Katie, "Look! This banana is a telephone!"

Is it true what Emma says?

Why does Emma say this?





## Vase

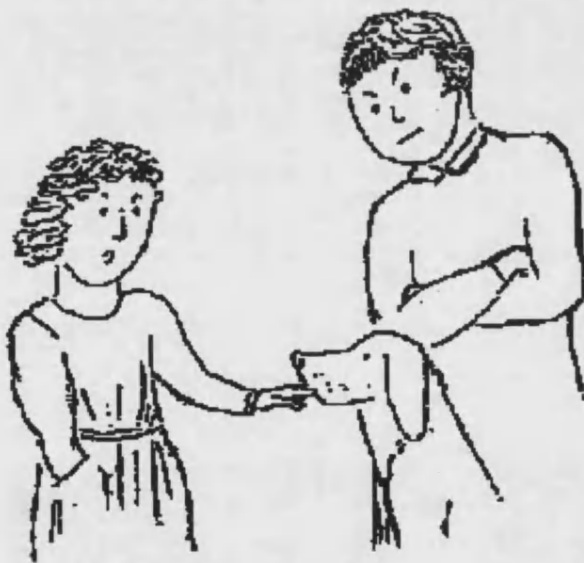
One day, while she is playing in the house, Anna accidentally knocks over and breaks her mother's favourite crystal vase. Oh dear!

When mother finds out she will be very cross!

Anna's mother comes home and sees the broken vase and asks Anna what happened, Anna says, "The dog knocked it over, it wasn't my fault!"

Was it true, what Anna told her mother?

Why did she say this?



## Haircut

Daniel and Ian see Mrs Thompson coming out of the hairdresser's one day.

She is looking a bit funny because the hairdresser has cut her hair much too short.

Daniel says to Ian, "She must have been in a fight with a lawnmower!"

Is it true, what Daniel says?

Why does he say this?



## Rabbit

Helen waited all year for Christmas because she knew that at Christmas she could ask her parents for a rabbit.

Helen wanted a rabbit more than anything in the world.

At last Christmas day arrived, and Helen ran to unwrap the big box her parents had given her.

She felt sure it would contain a little rabbit in a cage.

But when she opened it, with all the family standing around, she found her present was just a boring old set of Encyclopaedias, which Helen did not want at all!

Still, when Helen's parents asked her how she liked her Christmas present, she said, "It's lovely, thank you. It's just what I wanted".

Is it true, what Helen said?

Why did she say that to her parents?



## Pigsty

William is a very untidy boy.

One day his mother comes into his bedroom and it is even more messy than usual!

There are clothes, toys and comics everywhere.

William's mother says to William, "This room is a pig sty!"

Is it true that William keeps pigs in his room?

Why does William's mother say this?



## Glove

A burglar who has just robbed a shop is making his getaway.

As he is running home, a policeman on his beat sees him drop his glove. He doesn't know the man is a burglar, he just wants to tell him he has dropped his glove.

But when the policeman shouts out to the burglar, "Hey, you! Stop!" the burglar turns round, sees the policeman and gives himself up.

He puts his hands up and admits that he did the break-in at the local shop.

Was the policeman surprised by what the burglar did?

Why did the burglar do this, when the policeman just wanted to give him back his glove?



## Politeness

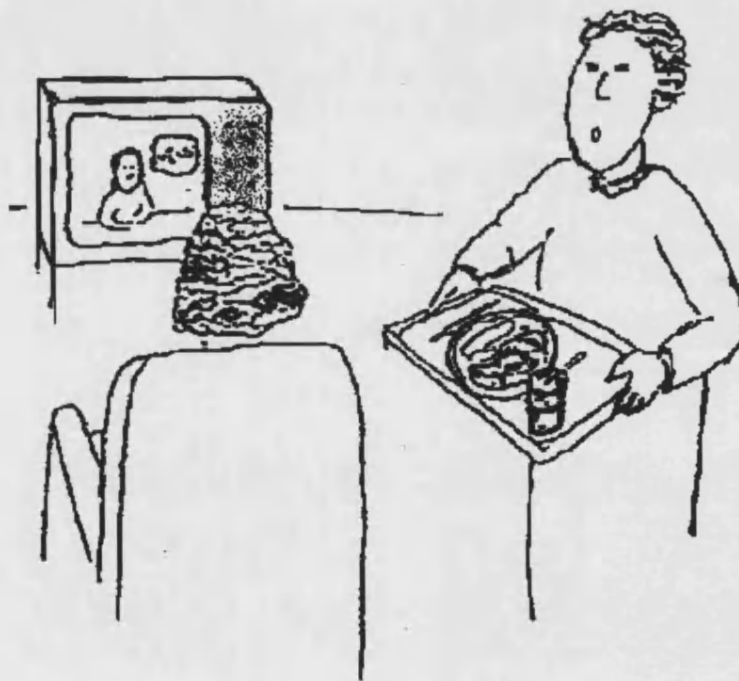
Ann's mother has spent a long time cooking Ann's favourite meal, fish and chips.

But when she brings it in to Ann, she is watching TV and she doesn't even look up or say thank you.

Ann's mother is very cross and says, "Well that's very nice, isn't it! That's what I call politeness!"

Is it true, what Ann's mother says?

Why does Ann's mother say this?



## Kittens

Jill wanted to buy a kitten, so she went to see Mrs. Smith who had lots of kittens she didn't want.

Now Mrs. Smith loved the kittens and she wouldn't do anything to harm them, though she couldn't keep them all herself.

When Jill visited she wasn't sure she wanted one of Mrs. Smith's kittens, since they were all males and she had wanted a female.

But Mrs. Smith said, "If no one buys the kittens I'll just have to drown them!"

Was it true, what Mrs. Smith said?

Why did Mrs. Smith say this to Jill?



## Swings

Today, Katy wants to go on the swings in the playground. But to get to the playground she knows she has to pass old Mr Jones' house.

Mr Jones has a nasty fierce dog and every time Katy walks past the house the dog jumps up at the gate and barks.

It scares Katy awfully, and she hates walking past the house because of the nasty dog.

But Katy does so want to play on the swings.

Katy's mother asks her, "Do you want to go out to the playground?" Katy says, "No".

Is it true what Katy says?

Why does she say she doesn't want to go to the playground, when she so wants to go on the swings that are there?





## Ghost

It is Halloween, and Chris is going to a fancy-dress party.

He is going as a ghost.

He wears a big white sheet with eyes cut out to see through.

As he walks to the party in his ghost costume, he bumps into Mr. Brown.

It is dark, and Mr Brown says, "Oh! Who is it?"

Chris answers, "I'm a ghost, Mr Brown!"

Is it true, what Chris says?

Why does Chris say this?



**APPENDIX B2**

**CODING MANUAL FOR HAPPÉ'S STRANGE STORIES: DEVELOPED AND  
USED BY THE ANNA FREUD CENTRE STANDARDISATION STUDY RESEARCH  
TEAM**

# **Coding Manual for Happé's Strange Stories<sup>1</sup>: Developed and used by the Anna Freud Centre Standardisation Study Research Team**

The Anna Freud Centre/University College London  
21 Maresfield Gardens, London NW3 5SD, UK

**revised (16/10/02) by**  
**Target, M., Fonagy, P., Ensink, K., Janes, K. L.,**

**Acknowledging previous contributions by**

**Charman, T., Shand P.,**  
**Schneider, T., & Crosse, J. L.**

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<sup>1</sup> Happé, F. G. E. (1994) An Advanced Test of Theory of Mind: Understanding of story character's thoughts and feelings by able autistic, mentally handicapped and normal children and adults. *Journal of Autism and Developmental Disorders*. Vol 24, 129-54.

## **THE STRANGE STORIES: Coding Manual (4 Point Scale)**

### **Revised Anna Freud Centre 4 point Coding Scheme**

This coding manual is based on Happe's (1994) original coding system which distinguishes between correct and incorrect responses, as well as between correct mental and correct mental and physical responses. We added a fourth category, after noting a number of bizarre responses in our clinical sample. The scale used in this manual distinguishes at the highest level between 1) correct answers that explain the protagonists motivation in mental state terms, 2) those that give correct but concrete or physical explanations, 3) incorrect answers, and 4) bizarre responses suggesting that more severe problems in thinking and understanding the communicative intentions of others are involved.

The child has to correctly answer the first question before the second question is asked. **ALWAYS** check that the first question is answered correctly before looking at the second question. The answer should be no to all of the questions except the Misunderstanding story (6). If the child incorrectly responds to the first question, then a scores of 0 is allocated.

**2 = Correct Mental Response.** This is defined as a response that explains the correct motivation and reasoning behind the behaviour. There is only 1 implied motivation for each story, but if the child explains the word, e.g. the story is about pretending and the child says they're "making up a story", then this would also score a 2.

**1 = Correct Physical Response.** This answer is correct but simply states the physical truth rather than displaying an understanding of the mental state of the protagonist or the motivation for their action.

**0 = Incorrect Response.** This includes incorrect physical and mental responses to the second question. Also includes statements that are true, but do not attempt to answer the question. Also no response, don't know, or an incorrect answer to first question.

**-1 = A Bizarre Response.** Used for responses which suggests a breakdown or absence of reasoning and gross disturbance in understanding others.

While the stories are largely unambiguous, the responses of children in this age may not describe the intentions or mental states reflected in the stories in the most succinct way, although their answers may reflect a sense of the motivations for the utterances. Our approach has been not to insist on the child providing the best possible explanation, but rather to examine whether their responses reflect a reasonable awareness of the underlying motivations and what is involved.

The Ping-Pong (Double Bluff), Vase (Lie) and School (Forget) stories are not coded in the present study because of inconsistencies in the way these stories were presented.

**Examples for scoring individual stories**

**Story 1: Pretend – Banana**

- 2:** The child understands that Emma is pretending. (Although the story is not strictly implying that she joking, we accept this response because it indicates the child understands that she doesn't really think the banana is a telephone).

Examples: She is pretending  
 Because she just wants to play  
 She's being funny/silly/having a joke  
 She wanted to make something funny up  
 Just playing

- 1:** The child gives a physical response to the second question.

Examples: Because it's shaped like a phone  
 Because it looks like a telephone

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: Because it's a banana not a phone  
 Because she's mad/stupid and not intelligent  
 She wants to telephone someone

- 1:** The child gives a bizarre response.

Examples: The banana rang  
 She wants everyone to know bananas are telephones

**Story 2: Joke – Haircut**

**2:** The child understands that the boy is making a joke about her hair.

Examples: He was trying to be funny/silly  
 Because he said it to make his friend laugh  
 To make a joke  
 To make fun of her

**1:** The child gives a correct physical response

Examples: Because it's so short  
 Because it looks like a lawnmower's cut it  
 Because she had a haircut

**0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: Because he's lying (IMS)

**-1:** The child gives a bizarre response

Examples: He knows it but doesn't want to make the teacher upset, not to chat with her, not a school day

**Story 3: White lie – Rabbit**

- 2:** The child understands that the child in the story does not want to hurt her parents' feelings, so tells a white lie.

Examples: She didn't want to upset her parents  
 She wanted them to be happy with what they gave her  
 She's told a white lie  
 That's just what you say, even if you don't like it  
 She wanted to please them

- 1:** The child gives a response which can be considered correct at a more concrete level.

Examples: Because her parents might shout at her

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: She really wanted a rabbit not an encyclopaedia  
  
 She said she wanted a rabbit and doesn't want the books, but I think she wants the books instead of the rabbit  
 She might not like rabbits  
 She could learn about rabbits' intelligence in the encyclopaedia

- 1:** The child gives a bizarre response.

Examples: She thought the encyclopaedia would talk

#### **Story 4: Idiom/Figure of Speech – Pigsty**

- 2:** The child gives a response which shows that the child either knows that the mother used a figure of speech, or is at least aware that it is an expression used or way of saying that his room is messy.

Examples: It's an expression of his room being very untidy  
 That's the way of saying it – pigs are messy  
 It's a figure of speech/expression  
 Cause pigs are messy and so people will call your room a pigsty if it's messy  
 Because it's a pigsty and that's what people say when it's messy  
 Pigsty's are really messy and that's what people say when it's messy

- 1:** The child gives a correct physical response.

Examples: Cos it looks like one  
 Because it doesn't look nice  
 She wants him to tidy up

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question. NB: Although the mental state may make sense, it is not explicitly implied by the story.

Examples: He probably acts like a pig

- 1:** The child gives a bizarre response.

Examples: She might have thought there was a pig in the room  
 Because he thinks she means pigs



### **Story 5: Misunderstanding – Glove**

- 2:** The child shows understanding that the burglar gave himself up because he thought the policeman was going to arrest him.

Examples: He thought that the policeman knew he had burgled/done the break in/was a burglar  
 He thought he was going to get arrested  
 He thought the policeman was trying to stop him

- 1:** The child gives a correct physical response.

Because he took the money

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: He just wanted to get away from him  
 Not to get arrested/put in jail

- 1:** The child gives a bizarre response

### **Story 6: Sarcasm – Politeness**

**2:** The child shows an understanding that the mother is using sarcasm.

Example: She's being sarcastic  
Sometimes what you say isn't what you mean  
To make Ann feel bad about what she did

**1:** The child gives a physical response.

Examples: Because Anne didn't say thank-you

(In this case we also rate responses which refer simply to anger, without any further explanation, here. For example: She was being angry)

**0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: Not saying thank-you is wasting her mother's time of making dinner  
She's just saying that  
She wants to tease her

**-1:** The child gives a bizarre response.

Examples: Just like she did wrong, Mum and Ann aren't intelligent

**Story 7: Persuasion – Kittens**

- 2:** The child shows understanding that Mrs Smith is trying to persuade Jill to buy a kitten.

Examples: She's trying to persuade her to buy one.  
She wants Jill to buy one

- 1:** The child gives a correct physical response.

Examples: She had too many kittens  
She couldn't look after them.

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: She won't harm them  
Because she can't have them all  
She lied  
She's getting annoyed with the cats because there are too many  
She just wanted to make money

- 1:** The child gives a bizarre response.

Examples: The cat kept breaking things

### Story 8: Contrary emotion – swings

- 2:** The child shows that they understand that Katy doesn't want to go the playground because she has to walk past the house and she is scared of the dog.

Examples: She's scared of the dog  
 She doesn't want to walk past the house because the dog will jump at her.  
 She is frightened  
 She doesn't want to go past the dog  
 She doesn't want the dog to bite her or jump at her  
 She doesn't want to go past the man's house because he has a dog that barks

- 1:** The child gives a correct physical response.

Example: Because of the nasty dog  
 Because the dog barks.

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples: Because she decided she didn't want to play on the swings after all

- 1:** The child gives a bizarre response.

Example: The swings bite

### Story 9: Appearance/Reality – Ghost

- 2:** The child understands that Chris is trying to scare Mr Brown or pretending to be a ghost.

Examples: He wants to scare him  
 He's pretending he's a ghost  
 He's pretending to be a ghost  
 Because he wants him to think he's a ghost

- 1:** The child gives a correct physical response.

Example: Because it's Halloween  
 Because he's dressed as a ghost  
 Because he's in a costume

- 0:** The child gives an incorrect physical or mental response, does not answer, or incorrectly answers the first question, or gives a response which does not answer the question.

Examples:  
 He is a ghost

- 1:** The child gives a bizarre response.

Example: Because his best friend's a ghost

### REFERENCES:

Happe, F. G. E. (1994) An Advanced Test of Theory of Mind: Understanding of story character's thoughts and feelings by able autistic, mentally handicapped and normal children and adults. *Journal of Autism and Developmental Disorders*. Vol 24, 129-54.

**APPENDIX B3**  
**HAPPÉ CODING SHEET**

## HAPPE CODING SHEET

It is the responses to the 2<sup>nd</sup> question that are scored, as the 2<sup>nd</sup> question is not asked until a correct response is given to the 1<sup>st</sup> question.

**If a child does not give a correct response to the 1<sup>st</sup> question then 0 is scored.**

2 =Correct Mental Response.

1 =Correct Physical Response.

0 =Incorrect Response (physical or mental). Don't know or no response.

-1 =Bizarre response, e.g. for Pretend story –“She wanted everyone to know that bananas are telephones.”

**Question 7 (Double Bluff) and Question 12 (Forget) do not need to be scored.**

	ID	YEAR	Banana -Pretend	Haircut - Joke	Rabbit - White Lie	Pig-sty - Idiom	Glove - Misunder- standing	Politeness - Sarcasm	Kittens - Persuade	Swings - Contrary Emotions	Ghost – Appearance/ Reality
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											

	ID	YEAR	Banana -Pretend	Haircut - Joke	Rabbit - White Lie	Pig-sty - Idiom	Glove - Misunder- standing	Politeness - Sarcasm	Kittens - Persuade	Swings - Contrary Emotions	Ghost – Appearan-ce/ Real;ity
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											
21.											
22.											



	ID	YEAR	Banana -Pretend	Haircut - Joke	Rabbit - White Lie	Pig-sty - Idiom	Glove - Misunder- standing	Politeness - Sarcasm	Kittens - Persuade	Swings - Contrary Emotions	Ghost – Appearan-ce/ Real;ity
23.											
24.											
25.											
26.											
27.											
28.											
29.											
30.											

**APPENDIX C1**  
**THE AFFECT TASK : CODING MANUAL**

**THE AFFECT TASK**  
**CODING MANUAL**

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## **THE AFFECT TASK**

### **DEVELOPMENT OF THE MEASURE**

The Affect Task has been developed over the past several years at the Anna Freud Centre, primarily by Peter Fonagy, Howard Steele, Miriam Steele, and Mary Target. Fonagy, Steele and Steele used an earlier version in work on infant attachment with children up to age six. The current manual reflects discussions and development carried out to adapt the task for children in middle childhood (aged six to eleven years) in a group led by Mary Target and Peter Fonagy. The Affect Task was designed to provide a test of children's attribution and understanding of feelings and mental states to cartoon characters portrayed in emotionally charged everyday situations.

### **DESCRIPTION OF THE MEASURE**

The Affect Task has two components. The first component involves the child naming the emotional expressions shown on nine cartoon faces. The faces were derived from Ekman and Friesen (1975) and show a range of expressions from happy to shocked. An initial investigation of the task revealed that not all the faces were recognised consistently by children between the ages of six and ten. This part of the task is therefore only used to familiarise the child with the different faces and the idea that each face is meant to represent a different mental state and is not scored. The responses the child gives are accepted, whether they are 'right' or 'wrong'. The same nine faces are then used in acetate form for the next part of the task.

The second and central component of the Affect Task presents the child with six cartoon drawings of children without facial expressions drawn in. The interviewer reads a short narrated script that accompanies each picture. There are four different stories, two of which have two parts to them. There are parallel versions of the six scenarios and accompanying cartoons for boys and girls.

**Story One** is about a bully who pushes over a younger child in front of his/her friends in the school playground.

**Story Two** describes an athletic child being selected by his/her teacher to be a swimming team captain from amongst a group of other children.

**Story Three** is a continuation of the previous story where one child, who is not very good at swimming, is the last person to get picked to be in a team.

**Story Four** is about a child, who flicks a piece of paper that stings the neck of the child sitting in front of him/her, during a maths lesson.

**Story Five** follows on from story four and involves the protagonist from this story being caught by the teacher and having to stay in and work during playtime. The previous victim and another child observe him through the window.

**Story Six** is about a child who mistakenly wears the wrong sort of clothes to an outdoor children's party and who is observed to arrive with his/her mother by a group of appropriately dressed children.

After the interviewer has read out the short narrated script that accompanies each picture the child is asked to choose appropriate acetate faces to show how all the children in the story might be feeling. He/she is invited to place as many faces, or feelings, on each of the characters as he/she may want. The child is then asked a number of questions about the feeling(s) that they have chosen.

1. What is that feeling? /How do you think that child is feeling? [accuracy]
2. Why do you think they are feeling like that (i.e. the justification for each face)? [justification]
3. Do you think they might be feeling anything else?
4. What happens to the feeling (i.e. what was the impact of the feeling)?<sup>3</sup> [impact]
5. Do you think that he/she may be feeling something different on the inside than s/he is showing on the outside? Why? [internal/external]
6. The 'challenge' question then asks the child to imagine that the story character was 'quite a different sort of child' from the one previously talked about, who had a different feeling to that which the child had ascribed to the character. The child is then asked for a justification as to why he/she thought, for example, that the victim of bullying might feel 'happy' when he/she was pushed over in the playground.

Question 6 was added to the original Affect Task to determine whether the child is capable of being recursive and flexible in his/her capacity to think about and consider the emotions of other children, or if he/she is only capable of considering the feelings he/she would have had in the same situation. Simply put, the authors are interested in whether the child can shift mental frames if challenged. The impact question (question 4) has been added to the Affect Task as a further opportunity to measure whether the child provides a description in terms of mental states (e.g. *“the feeling stays until later, when he thinks about something else like football and then he’s happy”*), or a more behavioural or physicalistic response to questions about feelings (e.g. *“she just kicked the wall for a while”*; *“her friend gave her some sweets”*.)

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<sup>3</sup> Questions 4, 5 & 6 are asked only in reference to the protagonist of the story

## **CODING: DEVELOPMENT OF THE SCHEME AND GENERAL PRINCIPLES**

The aim of this coding system is to provide a systematic approach for scoring children's justifications for the choices of facial expressions and their concomitant inner states, in terms of their ability to mentalise. The coding system has been developed using a hierarchical approach, which accesses the child's ability to mentalise with increasing elaboration, across a number of domains. Failure to attribute feelings, or physicalistic or 'canned' responses to the justification, impact and challenge questions, are scored at the lowest level. To score within any of the higher levels, the justification given has to fall clearly within that level: a suggestion of understanding is not considered a sufficient grounds for scoring, only explicit verbal material illustrating understanding is scored.

Answers are regarded as equally valid whether they are given voluntarily or as a result of further questioning by the interviewer. Answers elicited in response to one question or coding scale, should also be considered for the scoring of other scales to which the answer might apply, e.g. if the child offers a response for Accuracy that is accompanied by an explanation, such a description should be used to score Justification. Also, answers to the internal/external question are to be taken into consideration when scoring Accuracy and Justification. This ensures careful consideration of all the relevant information that the child provides. It is therefore important to consider all responses to a story before proceeding to code. **In all cases, the highest level the child achieves on each section is scored.**

Coding should be based on the affects that the child names, not on the acetate faces that are put on the characters. If the child makes an unambiguous facial expression to demonstrate how the character is feeling, the coder can take this into consideration and regard it as equal to a verbalised affect.

There are a number of codes that are used when an answer can not be scored reliably, for the following reasons:

- ♦ **Code "6"**: The question was omitted by the interviewer, or asked in such a way that the answer cannot be scored reliably (e.g. when the interviewer states questions or prompts in a suggestive, steering manner to the extent that the child's abilities cannot be assessed reliably).
- ♦ **Code "7"**: The child refused to answer.
- ♦ **Code "8"**: The coder is unable to hear the answer or the answer is uncodable for reasons other than those that apply to code 6.

In a small number of cases, children may give answers of a markedly bizarre quality. For specific populations Research Co-ordinators may wish to use a special code (-1) to identify these responses.



## ACCURACY OF THE ATTRIBUTED AFFECT

This score is based on a response to the question “How do you think [the character] feels?”

In considering the child’s response to this question, the following guidelines should be adhered to;

- Terms counted as emotions are:
  1. conventional emotion-descriptive terms: happy, sad, angry
  2. synesthetic terms that draw upon analogies between sensory experiences (blue) and mood states (sad)
  3. words that refer to emotions experienced during particular activities or circumstances by referring to the activities or circumstances themselves, e.g. cruel, cool, evil, wicked, smart, friendly, left out, bossy, lazy, bored, chuffed, cocky. (Ridgeway, Waters and Kuczaj, 1985)
- If during the interview the child changes his/her mind about what the character feels (i.e. “*he feels sad... no, he feels angry*”) this should be scored as two different affects assigned to the same character.

### **Level One: Absent or minimal**

The child is unable to attribute any affect to the character. May respond “*don’t know*”, “*what do you think*” or “*nothing*”. Child seems to give random answers; e.g. the bully is ‘eager’ or ‘interesting’. Inappropriate/nonsensical affect (to the situation), will also be scored at level 1, e.g. “*The boy who was pushed over by the bully feels happy because he likes being hurt*”.

### **Level Two: Imprecise**

The child is able to entertain the idea that the character has a reaction to the events described in the narrative, but the answer does not include an emotional component, even when prompted (“*he wants to go back inside*”, “*he wishes the bully would stop or get in trouble*”). Answers that are affectively vague and do not make the emotion explicit (“*he feels like he wants to push the bully off a cliff*”, “*feels like being sick and crying*”, “*he feels Oohh*”, “*horrible*”, “*greedy*” or “*not good*”), or do not clearly fit the context of the

story (*"Bully feels hopeless"*) are also coded at this level.

### **Level Three: Obvious**

The child is able to attribute an affect to a character and provide a specific emotional label, such as 'angry', 'disappointed' or 'scared'. These responses are at the level of the most obvious affects that might be attributed given the scenario; bully is 'happy', victim is 'sad'. If two affects are mentioned that are essentially synonymous (*"[bully] is happy and content"*, *"[character] not picked for team is angry and cross"*) the response should be scored at this level.

If the observer group are all given the same affect, the response should also be scored at this level.

### **Level Four: Subtle**

Child describes differentiated affect states that indicate a mixture and richness of feelings. However the child does not resolve contradictions if these affective states are opposed as justifications are not offered, are mutually exclusive or identical, e.g. *"[the character] is sad and cross"* [no explanation offered], *"She's upset because she doesn't get to play games and she's happy, because she might not like to play sports, and she doesn't have to do them"* [mutually exclusive], *"[character] is a bit sad, because he's the slowest and no one picks him, he is also angry for the same reason"* [identical].

Sometimes, a child might respond to this question by attributing one (out of two or more) affect that is meant to conceal the character's true feelings, e.g. : *"She's cross. (Anything else?) She is pretending to be happy so that they don't think she's a baby"* or *"Happy, because she knows they're watching, but inside she's sad, because she wasn't picked."*

In this case, the 'happy' affect is a pretense used to conceal the 'real' emotion previously identified, rather than another 'real' emotion. However, the fact that the child did spontaneously come up with the idea of a pretense emotion, should be credited. Code at level 4 (answers like this should also be used for scoring internal/external).

To score at this level for the observer group, the child must attribute different affects to the different characters.

### **Five: Sophisticated**

Child describes differentiated affect states. Any apparent contradiction between affect states is addressed as the child offers justifications that allow for the affects to occur simultaneously, e.g. *"[the character] feels sad that he's pushed over and he's angry with the bully for making him cry and spoiling his game"*.

Regarding the observer group, the child attributes more than one affect to at least one of the characters in the observer group. Any noticeable contradictions between affect states are also addressed.

#### **Further coding issues and examples:**

Feeling 'okay' or 'fine' is accepted as an affect as it is similar to feeling 'normal' which is among the 9 basic affects that Ekman and Friesen (1975) identified.

Level 3: *"he feels no shame."*

*"He can't feel upset because upset is for wimps!"*

Level 4: all observers are happy, but the reasons for happiness are different [different 'kinds' of happy].

## JUSTIFICATION

This score is based on a response to the question “Why do you think [the character] feels that way?”

Higher level answers include a reference to mental states, while the highest level answers are reserved for demonstrations of an understanding of 'minds in relation'. Mental states are **beliefs** (understood broadly as including the actor's knowledge, convictions, suppositions, ideas and opinions, i.e., mental verbs such as to think, pretend, imagine, expect, suspect, realise, notice, recognise, guess, wonder) and **desires** (understood broadly as including all pro and con attitudes, such as lusts, wants, wishes, preferences, goals and hopes as well as self-imposed obligations, values and aspirations, i.e. mental verbs such as to wish, want, like, care, prefer) (Wellman, 1992).

- Sometimes a child will respond to the (accuracy and) justification question with an answer that focuses on a reason for the concealment of an affect, e.g.: *[the victim] feels cross because she's been pushed over. (Anything else?). Happy (why?) because she doesn't want the others to think that she's a wimp'.*

This answer does not include a justification for the happy affect, as the happy affect is only explained in terms of pretence and concealment of another emotion. So, even though we score the answer under accuracy and internal/external, we do not consider the reason for the concealment as a justification for the affect. Other examples: *'she feels scared, but doesn't want to show it in case the bully will hurt her again'*

- Occasionally answers do not justify the affect, but instead link the affect to a motivation for action, e.g. *“he is angry (admin.: why?) he wants to push the bully over”*. In this case the child is not explaining why the character is angry, but talks about an action that the affect might be associated with. Do not rate this under justification, but include the response for the rating of 'impact'.

### Level One: Unjustified & parroting

Child doesn't give an answer, or provides a situational answer that closely resembles a parroting back of the story; *“because he has been pushed by the bully”, “because he has been hurt”, “because he's trying to work and got a bang on the head”* (child changes one or two words of original phrasing but does not 'rise above' the original story line). Unjustified answers are simple physical or imitative answers, that do not require the child to really think about the situation, and 'create' an explanation. *“[observers] are happy*

*because they are wearing the right clothes." "[observers] are happy because they don't have to do the writing."*

### **Level Two: Limited explanations from context**

The affect is explained as a function of the given physical situation or in a very simple way related to the personality of the character. These answers are slightly more sophisticated than those at level one and/or bring in mental/feeling states but in a very simple way: *"he is sad because it doesn't feel nice to be picked-on"*. Justifications of responses can mention feelings, but the explanations are limited to situations rather than mental states, e.g. *Character feels sad [why?] because he's scared of the bully*.

Answers based on trait attributions or usual behaviour also come under this heading (e.g. *"he feels angry because he's a bully – he's always rough and cross"*).

### **Level Three: Reference to mental states**

Answers explain feelings in terms of mental states, such as desires and beliefs, attributed to the character. Answers thus demonstrate the child's ability to mentalise in relation to affect states.

*"[The character] is angry because he wants (desires) to fight back but isn't allowed to", "[the character] is sad because he thinks no one can stop the bully", "he wishes one of his friends would've picked him"*.

This level is also scored if the child verbalises the thoughts of the character without explicitly referring to mental verbs, e.g. *"[the character] is like 'why don't I get picked?' [the equivalent of 'thinking']"*.

### **Level Four: Reference to mental states and implicit interpersonal orientation**

The affective reaction of the central character is based on the anticipated/imputed mental state of other, but this is implicit rather than explicit, i.e. the child acknowledges the interaction between two minds in his/her explanation and refers to the imputed state of other at least by implication (reflects on the affect of the 'other'). Second order affect is thus illustrated in the answers.

*"[The character] feels sad because he thinks the bully probably doesn't have any friends, so [the character] feels sorry for him", "[observer] is upset, because she's*

*thinking about how [the victim] feels”, “She might want to know why the bully threw the paper at her”, “[the character] feels guilty because he used to pick on the bully, and now he knows what it felt like to him”.*

Alternatively, the answer incorporates mental states of others, but can be considered ‘implicit’, as there is no explicit interaction between the mental state of the central character and the mental states he/she attributes to others, e.g. *“the character feels sad”* (Why?) *“because the others didn’t want her on the team”*. *“She’s feeling embarrassed, because they will think she’s stupid”*. *“[The bully] is happy because he’s throwing balls at [the victim] and she doesn’t like it.”*

Answers such as *“Mum is upset, because Jane is upset”, “Susan is surprised (adm: why?) because Rachel is angry with her”* might be less sophisticated as the feelings are not linked to speculations about the thinking behind the mental state of the other person, but clearly demonstrate that the affect of the main character is explained by a belief about the other’s feelings.

#### **Level Five: Reference to mental states and explicit interpersonal orientation**

Answers include explicit ‘minds in relation’; in the explanation of the affective reaction of the central character the child relates the character’s mental state to the mental state(s) of other and these mental states are spelled out, e.g. *“The boy who wasn’t picked feels sad because he thinks the others didn’t want him on the team”* (mentalistic response) versus *“He feels sad because the other(s) didn’t pick him”* (physicalistic response). Other examples are: *“[the bully] is happy because he knows that John [victim] doesn’t like it”, “she [victim] is scared because she might think that now she (the bully) might want to do it to her”, “she is feeling sad, because she thinks:” they don’t think I can swim.””*

#### **Further coding examples**

##### **Level 3:**

*(unhappy) because he feels he shouldn’t have flicked the paper at David.*

*He thinks he might get hit by the bully* [there is a reference to an anticipated action of other, but the anticipated action does not clearly relate to a mental state (the bully might be feeling angry, upset or cheeky) and therefore does not warrant a level 4 coding.]

##### **Level 4:**

*“She thinks that if she tells him, he might become aggressive”, “she wants to know why Rachel is acting this way”, “[observers] are shocked. They didn’t think that the bully*

*would do something like that", "mum is upset, because she knows her daughter is going to get teased", " he is sad and embarrassed, because I should've remembered, and everyone is gonna laugh at me, and spread rumours, and he's going to become the laughing stock", "She [bully] thinks it's a bit of fun to annoy people".* [The reference to actions of others such as blaming and spreading rumours, reveal the mental states of the 'other'].

## IMPACT

This score is based on a response to the question ‘What happens to [the character’s angry] feeling?’

### **Level One: Absent**

Child either cannot answer, or says “*Don’t know*”. Answers such as “*[the character] feels sad for ever and ever*”, “*it might turn into a happy feeling, or sad feeling or a cross feeling, or...*”, “*[her feelings] go whizzing round in her head*”, “*He pushes [the feelings] down the drain*” are also coded at this level.

### **Level Two: Behavioural**

Answer continues the story line, but it does not mention affect directly, e.g. “*He goes and tells the teacher*”.

### **Level Three: Affective sequel (simple)**

Answer describes what the character would feel like afterwards or how he/she might deal with his/her feeling(s) in simple mental state terms. Answers do not demonstrate an understanding of the contingency of the emotion upon behaviour. It is a simple description of a state of mind, e.g. “*[the character] pretends he’s not angry*”, “*[the character] sulks*”, “*it goes away after a while*”, “*[the character] stays sad*”.

N.B. Although answers such as “*[the feeling] turns into a smile*”, or “*she starts to cry*” do not mention affect directly, they are directly linked to certain affects. For that reason they can be considered as level 3 answers.

### **Level Four: Affective sequel (complex)**

Answer describes in subtle ways how the character would cope with the feeling. This might involve acknowledging the feeling and the way it affects behaviour, e.g. “*[the character] feels angry and this makes him pick a fight with his friend*”, “*he lets his feelings out and beats the boy up after school*”, “*she tries not to do much, because she doesn’t like everyone staring at her, she tries to make herself feel more happy, make herself calm down, sit down on a bench and tell the teacher*”, “*she tries to forget about it, tries to put it in the back of her mind*”. Alternatively, it may describe how one feeling changes into another and demonstrate an awareness of different possible feeling states depending on context and the process involved in changing feelings:



*“The boy who was picked for team captain felt really big and proud for a while, but then he started thinking about the races and got worried about doing well” “[the character] is happy because he’s the best swimmer, but the other team might win and then he feels a bit sad”, “if he’s back playing football, having fun, he’s sort of happy. But if the bully did it to someone else, he’d feel like that again. His feelings haven’t gone away, they’re still there, ready”, “depends on if he wins the race or not, if not he’ll feel angry”, “feeling stays until later, when he thinks about something else like football and then he’s happy”. “His feelings change, because they start being nice to him and say sorry and he’s happy then”.*

Answers that describe in a subtle way the continuing impact of one feeling or expectation on another, e.g. *“[the character] is worried for a long time because he thinks the bully might do it again”* are also coded at this level.

#### **Level Five: Affective sequel (complex with interpersonal dimension)**

Answer describes in subtle ways how the feeling might change or persist and involves an explicit relationship between the mental state of the character and the mental states of others in the story, e.g. *“the boy who was picked for team captain felt really big and proud for a while, but then he got worried that the others wouldn’t like him because he always gets picked for everything”. “she gets angry, because she doesn’t want the bully to think that she can just come and knock her over”.*

## CHALLENGE

This score is based on the interviewer changing the affect that the child has ascribed to the story's protagonist, to one that is approximately opposite. For example, if the child said the main character was sad, the child is then asked "You said [the character] feels sad, but let us imagine that [the character] is a very different sort of person from the one that you and I have been talking about and for some reason s/he feels happy. Can you give me a reason why s/he would feel like this?"

The definition of the 5 coding levels is generally the same as for 'Justification'.

### Level One: No answer

The child provides no response. This includes responses such as, *"Don't know"*, or *"That doesn't make sense"*.

### Level Two: Limited explanations from context

The affect is explained as a function of the given physical situation or in a very simple way related to the personality of the character. These answers are slightly more sophisticated than those at level one and/or bring in mental/feeling states but in a very simple way. Answers that contradict the story framework are also scored at this level, regardless of whether the child refers to mental states, e.g. *"he wasn't picked to be team captain"*, *"he doesn't know how to be team captain, because he wasn't really a good swimmer"* [the story framework states that the character is a very good swimmer], or *"[the character] likes to stay in because he likes doing maths"* [the original story states that the bully does not like maths and is bored with it].

As for justification, responses sometimes take the form of 'internal/external' answers, e.g.: *"(Why could she be happy?) She doesn't want her friends to think that she's unhappy."*

Strictly speaking, the answer doesn't justify the happy feeling. This might indicate that the child is not able to 'shift mental framework' and incapable of conceiving that a character might feel happy in that situation. The child 'explains' the affect as concealing the 'real' emotion, which the child originally attributed to the character. Code at level 2. Other examples: *"he'd be sad on the inside, he doesn't want to be embarrassed by crying in front of his friends so he's happy, he smiles about it."*, *he's got a happy face, just to say 'I'm glad to be doing this, it's worth staying in' but inside she's sad."*, *"if he's sad that he doesn't want to do the work, the teacher will tell him off, so if he looks happy, the teacher won't notice"*.

Answers that justify the affect by continuing the story line to explain the 'challenge affect', are also scored at this level, regardless of whether the child refers to mental states. These answer should be considered for impact. For example;

(Left Out): Administrator: *"Can you think of a reason why [the victim] might feel happy?"*

"

Child: *"Because his mother picked him up from swimming and they went to the movies".*

### **Level Three: Reference to mental states**

These answers explain feelings in terms of mental states. Answers therefore show evidence of mentalising about affect states, e.g. *"the boy who was picked as team captain felt worried because he gets very nervous during competitions and doesn't perform as well as he could so he is afraid he will make a fool of himself"*, *"He thinks he's a really good swimmer and he's gonna show them how good he is"*, or *"He doesn't want to be team captain, because he thinks he's not a good swimmer"*. In the latter two answers the story framework is not contradicted as the child refers to the character's interpretation of the event, and not to the actual facts of the situation.

This level is also scored if the child verbalises the thoughts of the character without explicitly referring to mental verbs, e.g. *"He may be in a bad mood after something happened, so he was like 'why do I have to do this?'"*

### **Level Four: Reference to mental states and implicit interpersonal orientation**

The affective reaction of the central character is based on the anticipated/imputed mental state of other, but this is implicit rather than explicit, i.e. the child acknowledges the interaction between two minds in his/her explanation and refers to the imputed state of other at least by implication (reflects on the affect of the 'other'), e.g. *"She doesn't want to choose, say one is her friend and not very strong, she wants her in her team but if they lose, she might get blamed"*, *"She doesn't want everyone to be get upset. She's worried, if she chooses the wrong people. She wouldn't feel very happy because she might make other people jealous"*. Second order affect is thus illustrated in the answers. Alternatively, the answer incorporates mental states of others, but can be considered 'implicit', as there is no explicit interaction between the mental state of the central character and the mental states he/she attributes to others.

**Level Five: Reference to mental states and explicit interpersonal orientation**

Answers scored on this level include explicit 'minds in relation'; in the explanation of the affective reaction of the central character the child relates the character's mental state to the mental state(s) of other and these mental states are spelled out, e.g. *"He's angry because the others always say he is teacher's pet, and he doesn't like them thinking that so he didn't want to be picked to be captain"*.

## INTERNAL/EXTERNAL

This score is a response to the question “ Do you think [the character] may be feeling something different on the inside than s/he might be showing on the outside” which can also be asked as “Do you think [the character] might have feelings that he is not showing to others?” In case the child answers yes, a prompt (“What does he/she feel inside that the others cannot see?”) must be asked in order to elicit more information.

- Some children respond to this question by referring to a 'thought' that they do not show, e.g.: *"She thinks they're all horrible but she doesn't want to show it in case they get really upset with her and don't want to be her friends."*

These answers are considered equal to answers that refer to an affect that is concealed.

- Some answers focus on an 'impulse' or intention that is concealed, e.g. *"he wants to get up and kick the bully, but he knows it's not the right thing"*. Even though the answer doesn't mention affect explicitly, it strongly implies that the child is angry, so you code it as if the child has mentioned an affect.
- As a general rule, the additional attribution of affect to the character, in response to this question, is included in rating the 'accuracy' and 'justification' scale, e.g. *"She might also feel worried, because she thinks that she might not be a good captain, but she doesn't want to show it because then they'll think she is a baby"*.

The 'worried' affect and the reason for the worried affect ('she thinks that she might not be a good captain') can be rated under accuracy and justification. However, this is not allowed when additional affects are mentioned that are not related to the situation as presented by the interviewer, but to subsequent events the child has talked about. For example, the child says that the character who is not picked (left out) is really angry because he wasn't picked. This makes him shout at the teacher, who then makes him get dressed again and sends him to the head teacher. If the child then says for internal/external: *"she is really upset on the inside because the teacher is angry with her but she doesn't want the other children to know"*, the 'upset' feeling can not really be rated under accuracy as to do so, would give the impression that the 'upset' feeling was a response to the original situation (being left out) in conjunction with the angry feeling. This is not the case. Often answers like this can be coded under 'impact'. (in addition to internal/external, if possible, as with the example stated above: '...but she doesn't want

the other children to know'.)

### **Level One: No answer**

Child gives no answer, simply answers either yes or no, or clearly does not understand the question, even with a prompt. Answers such as “she’s feeling sore inside” (victim in the bully story), or “sorry on the inside, sad on the outside” are also scored at this level.

### **Level Two: Answer without explanation:**

Level two is scored when the child identifies an internal feeling state which is not shown on the outside, but gives no explanation as to why this is the case or the answer does not make sense. Answers such as “she’s more angry inside [than she’s showing]” are also scored at this level.

Responses that indicate that the child understands the notion of hiding feelings, but insists that in this particular case the feeling inside and the one shown outside is the same, are also coded at this level.

### **Level Three: Answer with minimal explanation**

Child gives an acceptable but very limited explanation as to why a feeling is internal and not shown on the outside, e.g. *“the girl who is chosen to be captain feels happy on the outside and scared on the inside, she wants to look pleased”*.

### **Level Four: Answer with more complex explanation**

The child answers as for level three, but the explanation is fuller and appears more sophisticated. It may involve a number of different considerations about the situation, e.g. *“[the boy in the wrong party clothes] feels embarrassed and scared about what the others will say when his mum’s gone, but he only looks embarrassed. He was worried but he wants to try to look normal, he can’t help looking embarrassed because he’s gone red, but he tries to look as if he doesn’t care”, “the bully feels pleased on the outside but inside upset, bullies only pick on other people because they’re unhappy, like they might have a broken home or something, but they want to look tough so they don’t show they’re upset”, “The character] feels angry and sad, but only looks angry, he doesn’t want his friends to know he’s feeling sad”*.

N.B. Answers that include a consideration of the social implications normally warrant a score of 5 (see below). However, if this consideration is stated in a “simple” way, i.e. without referring to mental states, answers are scored at level 4 in order to distinguish

them from the more sophisticated answers that typically score at level 5. Examples are: *"...other people might laugh at her", "he doesn't look like that, because his mum might tell him off"*.

**Level Five: Answer with explanation and explicit consideration of interpersonal impact of concealment**

As for level three or four, but the child also considers the effect of concealment of one or more of the affects, giving a reason that shows that his/her motivation is social, e.g. *"[the boy who got pushed over] feels angry and sad, but only looks angry, he doesn't want his friends to know he's feeling sad or they may think he's a wuss [youth-speak for wimp, idiot etc]", "the girl who got picked for captain feels really happy that she got chosen and she also wants the others to do well so the team will win, she probably shows more her wanting the others to do their best because that is what the captain is meant to do, and if she shows she thinks she's better than everyone else they might think she's stuck up and not want to be on her side", "the boy who was punished by the teacher feels unhappy and angry, but he hides the anger so the teacher won't see or she might punish him for longer", "he might feel sorry for him, but doesn't show it, because the others might think he's a wimp", "she wants to cry, she might not want to show it, because people may think she's silly for crying"*.

## GLOBAL SCORE

This score is meant to reflect a clinical impression of the child's potential for affective understanding. A global score of 1 to 5 can be awarded, using the same 5-level scale as used for the rest of the task.

It is up to the discretion of the individual group of researchers to decide whether to use a global score or any other individual parameter for analysis and reports.

## REFERENCES

Ekman, P. & Friesen, W.V. (1975) *Unmasking the face*. Englewood-Cliffs. New Jersey: Prentice Hall.

Ridgeway, D., Waters, E., & Kuczaj, S.A. (1985). The acquisition of emotion-descriptive language: receptive and productive vocabulary norms for ages 18months to 6 years. *Developmental Psychology*, Vol. 12, No.5, 901-908.

Wellman, H.M. (1992). *The child's theory of mind*". London: MIT Press, p. 101.



### Affect Task: Coding Sheet

**Child Number:**

**Rater:**

**Date:**

**Attach summaries of responses for each story, used for coding purposes.**

**Score 6:** The interviewer did not ask the question or the question was asked in a way so that the answer cannot be scored reliably

**Score 7:** The child refuses to answer

**Score 8:** The coder is unable to hear the answer

**NB. Please add a “?” to your score if you are not sure.**

**(Detail of all queries (?) must be provided on an attached sheet for discussion)**

	Bully	Captain	Left out	Flicking	Detention	Party	GLOBAL
<b>Order of admin.</b>							
<b>Accuracy</b>							
<b>Hero/Victim</b>					N/A		
<b>Bully/Mother</b>		N/A	N/A				
<b>Observers</b>				N/A			
<b>Justification</b>							
<b>Hero/Victim</b>					N/A		
<b>Bully/Mother</b>		N/A	N/A				
<b>Observers</b>				N/A			
<b>Impact</b>							
<b>Hero/Victim</b>							
<b>Challenge</b>							
<b>Hero/Victim</b>							
<b><u>Internal/external</u></b>							
<b>Hero/Victim</b>							

**Please indicate the order in which the stories were administered**

**APPENDIX C2**  
**AFFECT TASK : ADMINISTRATION PROCEDURE**

## AFFECT TASK

### ADMINISTRATION PROCEDURE REVISED 28/9/2001

Introduce yourself and the task. Explain to the child that you are going to hear some short stories in which people are feeling different things and then you would like to talk about why the child thinks the people could be doing it.

Bring out the Eckman faces. Ask the child what he thinks each of the faces are feeling. There are no wrong or right answers. This is not for coding purposes, but to help the child associate emotions with the faces and begin to talk about them as well as a warm-up for both of you.

### ADMINISTRATION ISSUES

1. Remember to always say out aloud the faces the child chooses for the cartoons. (i.e. which face are you using for this one? - the children may alter meaning of faces, and the camera cannot see them).
2. Do not tell the stories (or use the script) verbatim. Tell them as you would a story in any kind of situation, use eye-contact, point to the characters you are referring to, etc.
3. Let the child lead. The prompts do not have to be asked in order, allow the child to lead the conversation and steer in a direction that seems natural/appropriate. **Make sure you ask all of the prompts by the end, this is vital!** You can also ask probing questions that are not on the protocol if you feel that they will elaborate what the child is saying, for coding purposes. It is your role to understand clearly how the child understands the dynamics in the story/their world but beware of leading questions.
4. Although the administration is child-led, it may be helpful to think about what sequence you ask the prompts in. For example, asking all the protagonist prompts one after the other may increase an older child's interest and enthusiasm, but may intimidate a more shy or younger child. Also, if the child's narrative begins to wane, prompting for putting on an acetate is often a helpful way of 'un-sticking' the child's focus.
5. It is sometimes helpful to repeat that the child can use as many faces on as many characters as they wish on the odd occasion.
6. If child shares the same name as any of the characters change it to something different.
7. For each of the stories, the format is the same.
  - All the characters are asked:
    1. How they feel
    2. Why
    3. Anything else
  - While the protagonist is asked a series of more elaborate questions.

1. What happens to the feeling?
2. Is the character feeling something different on the inside than they are showing on the outside?
3. Why?
4. Can child justify reason for socially unacceptable face?

➤ Acetate faces are chosen.

### **Administration of the Task**

With each story the child is asked to choose appropriate acetate faces to show how all the children in the story might be feeling. He/she is invited to place as many faces, or feelings, on each of the characters as he/she may want. The child is then asked a number of questions about the feeling(s) that they have chosen

- 1) What is that feeling? /How do you think that child is feeling?
- 2) Why do you think they are feeling like that (i.e. the justification for each face)?
- 3) Do you think they might be feeling anything else?
- 4) What happens to the feeling (i.e. what its impact was)?
- 5) Do you think that he/she may be feeling something different on the inside than s/he is showing on the outside? Why?
- 6) The challenge question then asks the child to imagine that the story character was 'quite a different sort of child' from the one previously talked about, who had a different feeling to that the child had ascribed to the character. The child is then asked for a justification as to why he/she thought, for example, that the victim of bullying might feel happy when he/she was pushed over in the playground.

Question 6 has been added to the original Affect Task to determine whether the child can be recursive and flexible in his/her capacity to attribute emotions to children, or if he/she is simply extrapolating from the feelings he/she would have had in the same situation. Simply put, the authors are interested in whether the child can shift mental frames if challenged. The impact question has been added to the Affect Task as a further opportunity to measure whether the child provides a description in terms of mental states

e.g. she carried on feeling sad till her friends were kind to her, they said the bully just picks on everybody - that made her feel better.

Or whether they use a more behavioural or physicalistic response to questions about feelings : e.g. she just kicked the wall a while; her friend gave her some sweets.

## **INTRODUCTION**

I would like to tell you some stories about children your age and what happens to them and then talk about what you think the children in the stories might be feeling. For each story you can put as many faces on each person as you wish, on as many of the people as you want.

### **Example Story:**

#### **SCHOOL BULLY**

**John/Jane** is a boy/girl about your age and s/he goes to a school a bit like yours. One day when s/he is happily playing with his/her friends in the playground the school bully comes along. S/He is much bigger and older than John/Jane and likes to pick on people for no reason at all. Today s/he picks on John/Jane. S/He comes right up to him/her and pushes him/her over so that John/Jane falls over onto the ground. It really hurts John/Jane and the school bully just laughs.

#### **John/Jane**

- How do you think that makes John/Jane feel? Why?  
Anything else? Why?
- What happened to the ... feeling? What does Jane/John do with the ... feeling? (Jane/John does not feel this way forever, what happens?)
  1. Do you think John/Jane feels different on the outside than s/he feels on the inside? Why?
  2. Now, you said John/Jane felt ..., which is a good answer. What if I change the way John/Jane looks and I put a happy face on him/her. (*Change face, putting child's to the side. Choose happy or sad/angry faces - whichever feels most inappropriate. If child has used this face spontaneously when discussing mixed emotions, choose something similar, such as shocked*). Can you think of a reason why John/Jane might be feeling like this?  
  
(*After the child answers, and if you feel they might be concerned with you changing their story or that you are telling them they are incorrect, put child's face back on and finish with their face.*)

#### **Bully / Friends**

- What about the bully / friends, how do you think s/he feels? Why? Anything else? Why?

## Affect Task Crib Sheet

### SCHOOL BULLY

**John/Jane** is a boy/girl about your age and s/he goes to a school a bit like yours. One day when s/he is happily playing with his/her friends in the playground the school bully comes along. S/He is much bigger and older than John/Jane and likes to pick on people for no reason at all. Today s/he picks on John/Jane. S/He comes right up to him/her and pushes him/her over so that John/Jane falls over onto the ground. It really hurts John/Jane and the school bully just laughs.

### Swimming Team Part I

In this story it is Thursday afternoon and all the class are going for swimming lessons. The teacher has decided to organise two teams so that the children can race against each other. One of the boys/girls in the class is called **Mike/Sarah** and s/he is a very good swimmer. Mike/Sarah is chosen to be one of the team captains and s/he gets to pick his/her team from the other children.

### Swimming Team Part II

The teams are getting picked and **Steve/Ann** who can't swim very well is not getting picked for any of the teams. S/He ends up being the very last person to get picked.

### DETENTION PART I

The class is having a maths lesson and the children are having to work hard so that they can pass their tests. But one of the boys/girls called **Carl/Cathy**, who is sitting at the back of the class, hates maths and is bored of working. When s/he thinks nobody is looking s/he screws up a piece of paper and flicks it at Dave/Rachel, the boy/girl sitting in front of him/her. It hits David/Rachel and stings the back of his/her neck.

### DETENTION PART II

OK, now let's continue the story. The teacher sees what happens and is very cross with **Carl/Cathy** and makes him/her stay in to do extra work when all the other children get to go out and play. Two of the children are at the window and can see that Carl/Cathy is being kept inside.

### CHILDREN'S PARTY

This is a story about a boy/girl called **Martin/Maria** who has been invited to a friend's party after school. He has put on all his best clothes so that s/he looks very smart. His Mum takes him/her to the party but when s/he gets there s/he finds that all the other children are dressed in scruffy out-door clothes. Martin/Marie had forgotten that it was an out-door party and is wearing the wrong clothes. The other children all look round at him/her when he comes to the door.

➤ How might Martin's/Marie's Mother be feeling? Anything else? Why?

In all cases the character whose name is **bold** is the story's protagonist and this is who the main prompts should be asked about.

**PROMPTS**

**For every character:** How do they feel?

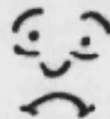
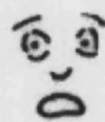
Why?

Anything else?

**For the Protagonist:** What happens to the ... feeling?

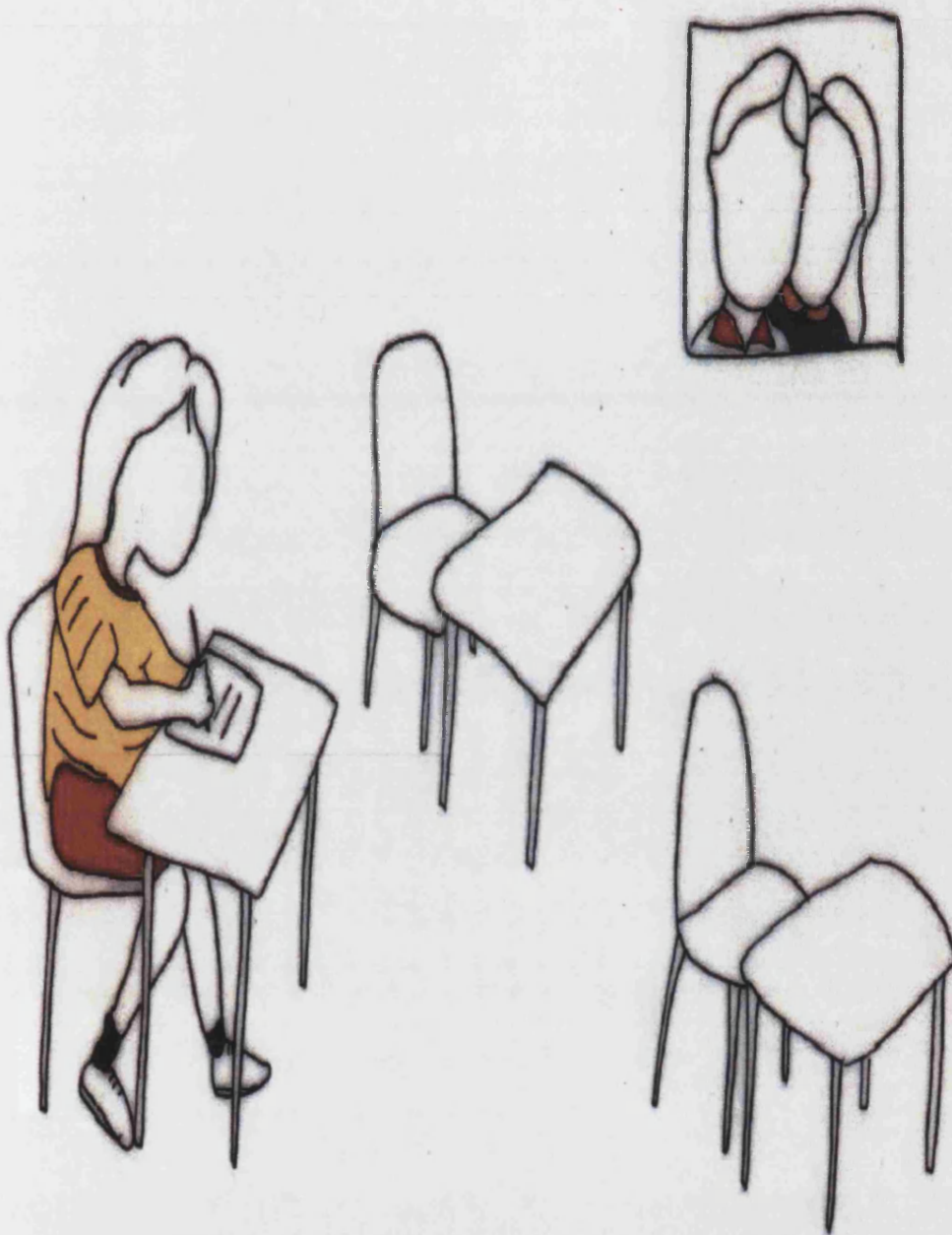
Do they look differently on the outside than the way they feel  
on the inside? Why?

Challenge (Change the face to an inappropriate emotion)

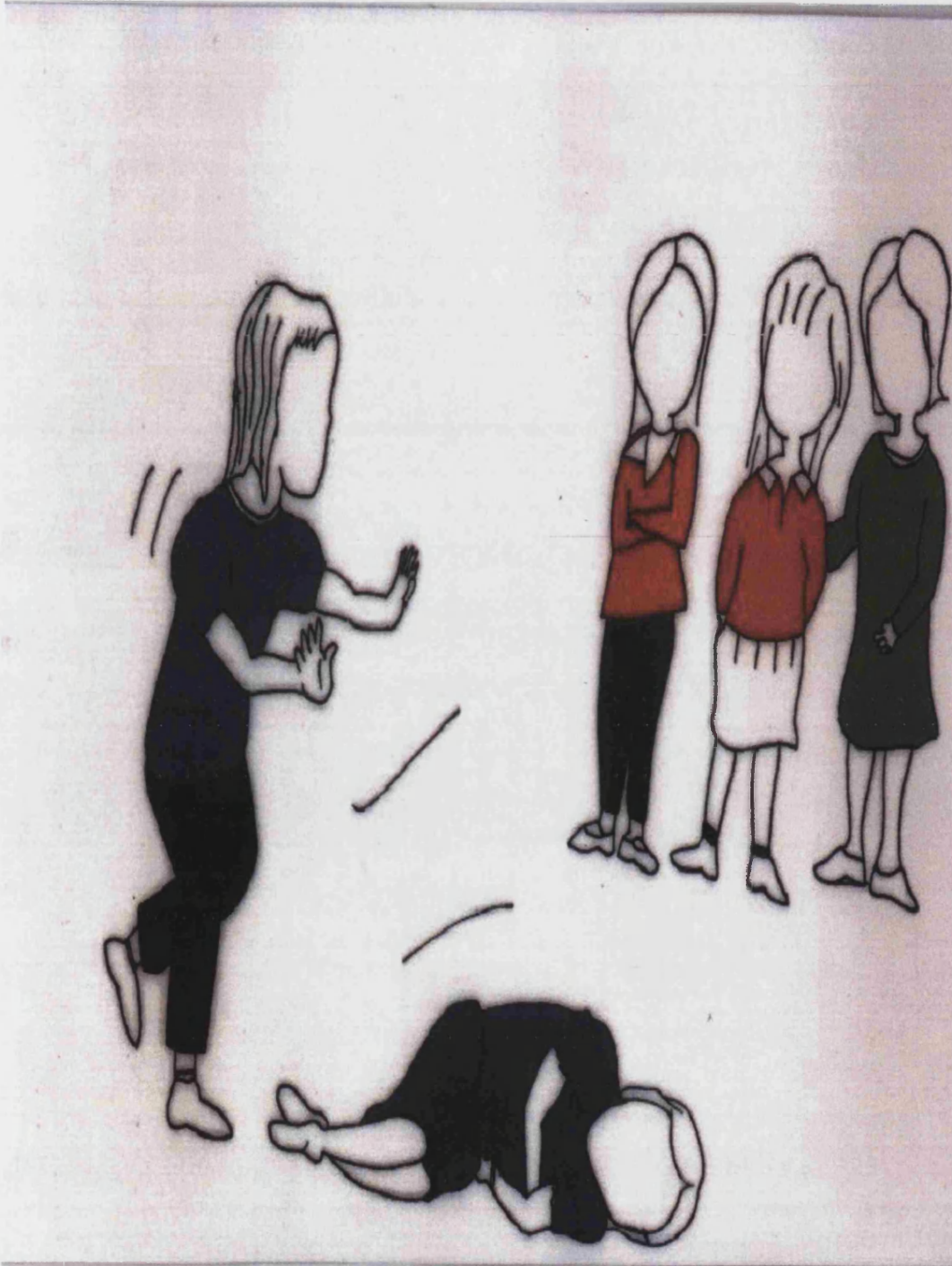


Acetate of Ekman's Faces





Detention Story

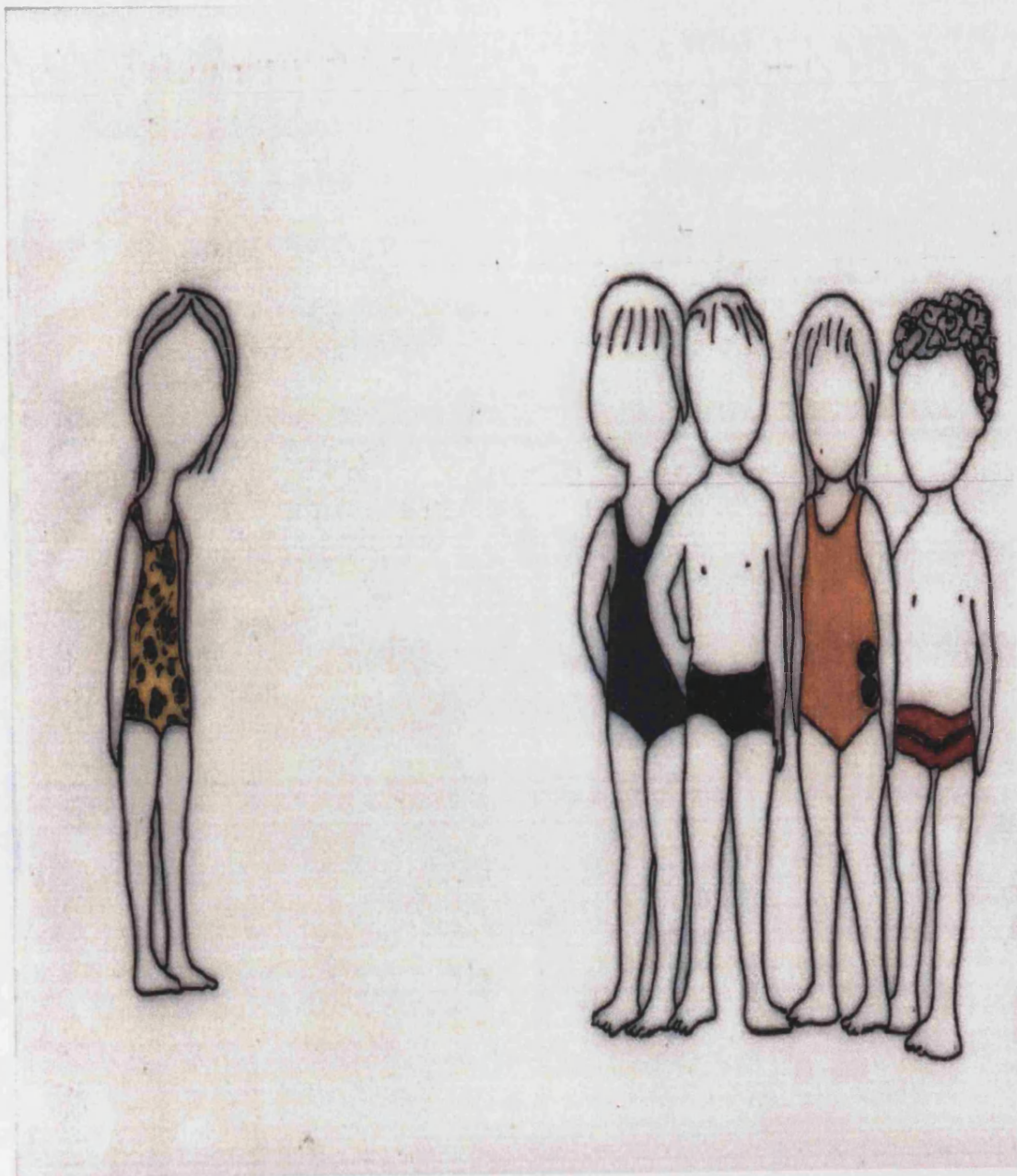


School Bully Story

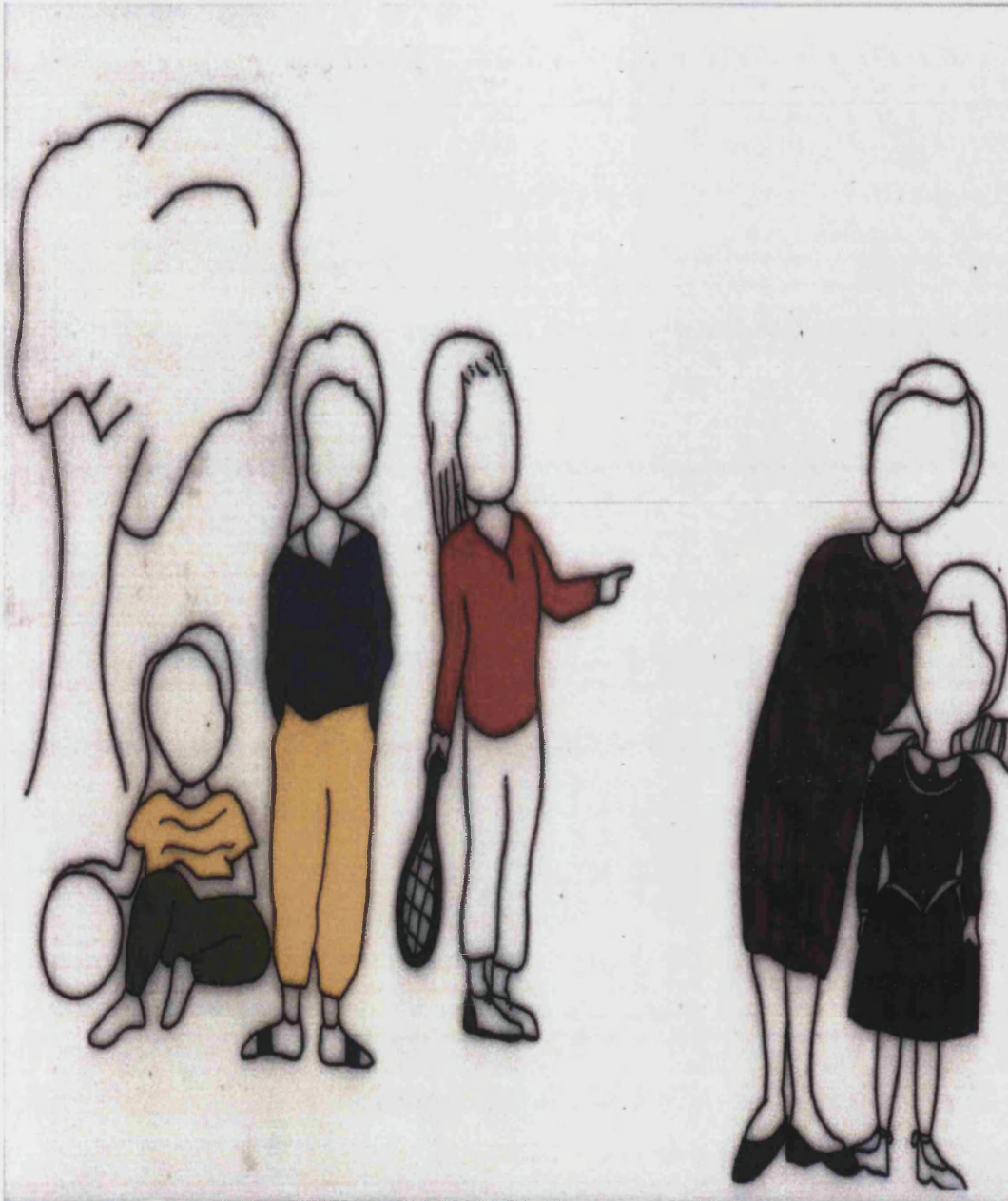


Captain Story

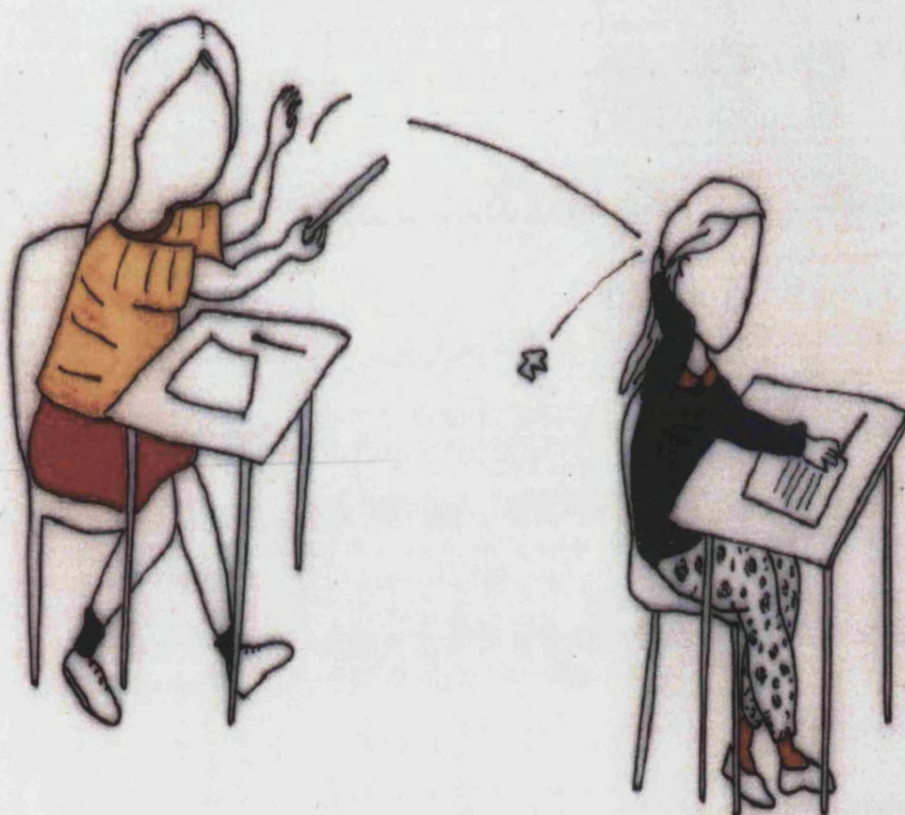




Left Out Story



Party Clothes Story



Flicking Story

**APPENDIX C3**  
**AFFECT TASK: CODING SHEET**



### Affect Task: Coding Sheet

**Child Number:**

**Rater:**

**Date:**

**Attach summaries of responses for each story, used for coding purposes.**

**Score 6:** The interviewer did not ask the question or the question was asked in a way so that the answer cannot be scored reliably

**Score 7:** The child refuses to answer

**Score 8:** The coder is unable to hear the answer

**NB. Please add a “?” to your score if you are not sure.**

**(Detail of all queries (?) must be provided on an attached sheet for discussion)**

	<b>Bully</b>	<b>Captain</b>	<b>Left out</b>	<b>Flicking</b>	<b>Detention</b>	<b>Party</b>	<b>GLOBAL</b>
<b>Order of admin.</b>							
<b>Accuracy</b>							
<b>Hero/Victim</b>					N/A		
<b>Bully/Mother</b>		N/A	N/A				
<b>Observers</b>				N/A			
<b>Justification</b>							
<b>Hero/Victim</b>					N/A		
<b>Bully/Mother</b>		N/A	N/A				
<b>Observers</b>				N/A			
<b>Impact</b>							
<b>Hero/Victim</b>							
<b>Challenge</b>							
<b>Hero/Victim</b>							
<b><u>Internal/external</u></b>							
<b>Hero/Victim</b>							

**Please indicate the order in which the stories were administered**



**APPENDIX D1****THE CHILD ATTACHMENT INTERVIEW (CAI) PROTOCOL**

## **THE CHILD ATTACHMENT INTERVIEW (CAI) PROTOCOL**

**Devised By**

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**CHILDHOOD ATTACHMENT INTERVIEW (CAI) PROTOCOL****( 8 TO 12 YEAR OLDS) (Revised Edition VI, 1/5/99)**

The CAI aims to access children's mental representations of attachment figures and significant others (if appropriate). One way of trying to access these representations is to ask children about their experiences with, and perceptions of, their parents.

The CAI is not predominantly designed to elicit biographical or episodic information, rather it attempts to capture the affective and procedural qualities of the relationships described.

Central to the CAI is the degree to which the child conceives of his or her parents as emotionally available and responsive, and is thereby able to use them as a secure base. More specifically, the CAI seeks to tap into memories (or fantasies) the child may have concerning times of crisis (e.g., personal injury, bullying), losses, and separations from parents, in addition to positive aspects of their relationships with their parents (cuddling, talking, spending time together).

The interviewer should consistently hold in mind the importance of assessing the child's view of the Relationship Episodes (REs). Therefore, prompts should reflect this emphasis.

Some children are able to recount coherently and sequentially the events within which the REs are contained. However, others may require additional help in the form of scaffolding from the interviewer in order for them to tell the story in a way that can easily be understood and subsequently coded. The questions ask the child about his or her relationship with attachment figures and about specific situations in that relationship, such as when Mum gets upset or when Mum and Dad argue.

During the interview it is extremely important to obtain specific examples from the child in response to EACH question. This is VERY important particularly for questions 2 which asks the child for three words to describe themselves and questions 3 and 5 which ask what it's like to be with Mum and Dad respectively. You MUST ask the child for an example for each of the words they give, as the coding system for this interview relies upon the child giving specific examples to illustrate each of the words he/she uses. For

instance, in question 3 the child might say that it feels safe, happy and relaxing to be with Mum so you must ask the child for an example of when it felt safe, an example of when it felt happy and an example of when it felt relaxing to be with Mum. If the child finds this difficult, then you can ask him/her to “describe a time when it felt ...”, or “tell me about the last time it felt.....” to be with Mum. Always follow up brief answers to questions by asking for examples. The coherence of the interview can only be assessed if the child provides examples for his/her answers – if the child says that when Mum gets upset, she shouts and he/she gets sent to his/her room where he/she plays computer games, then ask for a specific example of when Mum became upset. Remember, an interview that only produces answers like “it feels happy to be with Mum because she is nice and does things for me” is likely to be rendered uncodable due to insufficient information.

Some questions have alternative phrasings if the child doesn’t understand what you mean. It is not necessary to strictly adhere to the format of the questions, and you can re-phrase the question if you need to, in order for the child to understand. Use some of the suggestions in the text (e.g. question 10) if the child fails to respond or says “no”. For example, if the child says no one they cared about has died, just check by asking about grandparents, uncles, aunts etc. Children who have said “no” quickly realise that their grandfather did actually die last year when asked specifically about grandparents! Be careful about putting words into the children’s mouths though.

The interview is sometimes a little stressful for the children; you should ask for specific examples and use the prompts. If the child says “no” or doesn’t reply to a particular question, use the prompt or re-phrase the question to ensure that the child’s failure to respond is not due lack of comprehension. DO NOT however, prompt more than once or twice since the child’s reported inability to recall may reflect a particular defensive strategy which in itself provides useful information for subsequent coding. You must be aware that particular questions may be more difficult for some children and you therefore need to prompt gently and move on to another question if necessary but without compromising the data.

It is important to note that the CAI is a semi-structured interview and hence affords some flexibility in the use of prompts depending upon the child’s responses. Some children may describe episodes early in the interview that are relevant to subsequent questions. To illustrate, a child may describe the loss of his/her grandparent when describing why

he/she chose the word caring to describe his/her relationship with mum. Although it is not recounted in the loss question, it is perfectly acceptable for the child to describe the event. However, it is unnecessary to prompt further for loss there and then and you **MUST NOT** skip over the loss question. Rather when you get to the loss question you may say “I know you’ve talked before about the death of your grandfather and I would like to ask you a few more questions about it”, thereby acknowledging the child’s earlier description. A child may also recount an episode where mum was upset with him/her in response to the question asking for 3 adjectives of what its like to be with mum. In this case, when you get to the question about a time when mum was upset, say “I know you’ve told me before about that time your mum got upset with you but I wonder if you can remember another time when that happened”.

Finally, It is often the case that interviewers ask closed or leading questions when confronted with a child who clearly finds it difficult to engage in the task and often reports lack of memory. You **MUST AVOID** at all cost asking **LEADING QUESTIONS** or re-phrasing adjectives or descriptions the child may provide. Asking the child “did you feel upset” not only implies that the child was upset at the time but also can only lead to a yes/no response. Asking the child “How did you feel when that happened?” enables the child to express his/her feeling in more detail.

## **IMPORTANT GENERAL PROMPTS**

Prompts are not principally given to find out more episodic information. Instead they are offered to provide clarity concerning the nature and quality of the child’s attachment representations. In other words, there is an emphasis within the CAI on **quality not quantity**.

- ◆ If the child responds with concrete, physical attributes or purely factual information (see for example question 2) then attempt to explore the affective nature of the description relayed. If the child does not respond with a RE, do not persist, simply move on.

If potential REs are identified anywhere throughout the interview then:

1. Initially ask the child to tell the story from the beginning.

2. If the child has problems with sequencing their narrative orientate them by asking for specific details surrounding the events (e.g., Who was there? What happened? What was there? What did you do?)
3. Ask how the child and other (if relevant) felt in the situation.

### **Presenting the interview**

Present the interview by saying:

“This is an interview about you and your family. I am going to ask you some questions about yourself first and then I will ask questions about your relationship with your parents. For each question I will ask you to give me some examples. This interview is not a test and there are no right or wrong answers. I would just like you to tell me how you really think and feel about what you and your family are like. The interview will last about half an hour (30 minutes)”.

- 1) **Can you tell me about the people in your family?** (May need to qualify by saying “That is the people living together in your house” if child starts describing extended family members. If child only names one parent, ask about 2<sup>nd</sup> parent, how much contact, etc.).

If the child’s parents are separated or divorced, ask about step parents. It is important to establish who the child considers to be the primary caregivers and ask all subsequent questions about them. It may mean that you ask not only about the biological parents but also about the step mum or grandmother.

This is a warm-up question and its therefore not aimed at trying to obtain detailed biographical information but rather to establish who are the primary caregivers and to engage the child in the interview and reduce any anxiety.

- 2) **Tell me three words that describe yourself , that is not what you look like, but what sort of person you are (It may be useful to say “that is your personality”. Some children may find it helpful to imagine writing a letter to a pen pal).**

1..... 2..... 3.....

- a) Ask for specific examples to support each adjective, i.e., “Can you give me an example of when you felt” 1..... 2..... 3.....

**Prompts:** After each example, prompt the child as appropriate focusing on any specific relationship episodes (See introduction).

- 3) **Can you tell me three words to describe your relationship with you mum? (can add “that is, what it’s like to be with your Mum?”).**

1..... 2..... 3.....

- a) Ask for specific examples to support each adjective, i.e., “Tell me about a time when you felt” 1..... 2..... 3..... with her”

**Prompts:** Immediately after each example prompt the child for more detailed description of the relationship episode as necessary (See introduction).

- 4) **What happens when Mum gets cross with you or tells you off?**

- a) **Prompt: If you’ve done something wrong or done something to upset her, what does she usually say or do?**

**Ask for a specific example, can say “Tell me the last time mum got upset with you”.**

- b) **How did you feel when that happens?**

- c) **How did you think your mum feels when that happens?**

- d) **Why do you think she does \_\_\_\_\_ (whatever the child says mother does, e.g., shouts at you)?**

- e) **If child does NOT take this to mean getting angry:- Further prompt: What happens when your Mum tells you off/is angry with you?**

f) Do you know why she tells you off or what you have done wrong?

g) Do you think it's fair?

5) Can you tell me three words to describe your relationship with you Dad? (can add "that is, what it's like to be with your Dad?").

1..... 2..... 3.....

a) Ask for specific examples to support each adjective, i.e., "Tell me about a time when you felt 1..... 2..... 3..... with him"

**Prompts:** Immediately after each example prompt the child for more detailed description of the relationship episode as necessary (See introduction).

6) What happens when Dad gets cross with you or tells you off?

a) Prompt: If you've done something wrong or done something to upset him, what does he usually say or do?

Ask for a specific example, can say "Tell me the last time mum got upset with you".

b) How did you feel when that happens?

c) How do you think your dad feels when that happens?

d) Why do you think he does \_\_\_\_\_ (whatever the child said father does e.g., shouts at you)?

e) If child does NOT take this to mean getting angry:- Further prompt: What happens when your dad tells you off/is angry with you?

f) Do you know why he tells you off or what you have done wrong?

g) Do you think it's fair?



**7) Can you tell me about a time when you were upset and wanted help?**

**Prompt:** You were trying to tell someone something and no one understood what you meant? Or, there was something you wanted someone to do and no one understood you?

If the child says that this hasn't happened, offer suggestions: e.g., how would you feel if; your teacher told you off in front of the whole class, or you asked your friend to play after school and they said no because they didn't like you anymore, or you were bullied at school.

**Prompt for a specific example when child felt upset or misunderstood.**

**8) Do you ever feel that your parents really don't love you?**

**a) Prompt:** Can you tell me when you felt like that?

**b) Do you often feel like that?**

**9) What happens when you're ill?**

**Prompt for a specific example i.e., "Can you tell me what happened?"** What did you do?  
Does anyone stay at home with you?

**10) What happens when you hurt yourself?**

**Prompt for a specific example, i.e., "Can you tell me about a time when...?"**  
What did you do? Who was there?

**11) Have you ever been hit by an older child or grown up in your family?**

**Prompt to get as much information as possible about the incident and how the child feels about what happened. If the reply is NO, move to the next question.**

**a) Did it happen once or twice or more often?**

**b) Can you tell me what happened?**

**c) How did you feel?**

- 12) Have you ever been hit or hurt by someone else, an older child or adult outside your family?**

**Prompt** to get as much information as possible about the incident and how the child feels about what happened. If the reply is NO, move to the next question.

- a) Did it happen once or twice or more often?**
- b) Can you tell me what happened?**
- c) How did you feel?**

- 13) Has anyone close to you ever died? Has an animal ever died?**

- a) What happened? Was the death sudden? Did you go to the funeral?**
- b) How did you feel about it?**
- c) How do you think it made other people feel? (e.g. Mum, Dad, sibling?).**

- 14) Is there anyone that you cared about who isn't around anymore? (This should be asked as an extension of question 10 only if this issue has not been covered previously).**

- a) How did it feel when they went away? Did things change much?**
- b) Do you keep in touch? If yes, how, if no why do you think that is?**

**If child says no:** Tell me about a time when things changed. (e.g. moved house, went to new school, parents separating, friend left).

- a) How did you feel?**
- b) Do you keep in touch? If yes, how, if no why do you think that is?**

- 16) Have you ever been away from your parents for longer than a day? (very important question concerning separation from parents, try therefore to get as much information as possible).**

**Prompts:** Prompt to get a clear idea of the incident the child is describing (i.e., When, Who they were with, Where to, How long for, What they did)

- a) What was it like to be away from you parent/s?**
- b) What do you think it was like for your mum and dad?**
- c) What was it like seeing mum and dad again?**

- 17) Do your parents sometimes argue?**

**Prompt** for a specific example, can say “Can you tell me about the last time your parents were arguing”

- a) How do you feel? Why do you feel like that?**
- b) Why do you think they do that?**
- c) How do you think they feel?**
- d) Do they know how you feel?**

- 18) a. In what ways would you like to be like you mum?**

**b. In what ways would you not like to be like you mum?**

**c. In what ways would you like to be like your dad?**

**d. In what ways would you not like to be like your dad?**

**19) Ending Question: If you could make three wishes when you are older what would they be?**

(finish up question, should be asked in playful manner and affirm the child's answers, e.g., "ah, that sounds really good").

**APPENDIX D2**  
**CHILD REFLECTIVE FUNCTIONING SCALE :**  
**SCORING MANUAL**

**CHILD REFLECTIVE FUNCTIONING SCALE  
SCORING MANUAL**

**For Application to the  
CHILD ATTACHMENT INTERVIEW  
(Age Range 8 – 12 years)**

**DEVELOPED BY:  
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## INTRODUCTION

This manual is based upon the Adult Reflective Functioning Manual developed by Fonagy, Target, Steele and Steele (1996). Modifications have been made, and illustrations from children's narratives are used to demonstrate the application of the manual and scale in researching the reflective functioning of children. A very good and comprehensive introduction to concept of Reflective Functioning has been included in the Adult Reflective Functioning Manual and is appended to this manual. We would strongly recommend the first eleven pages of the Adult Manual as essential reading for those who do not have a background in this area as it clarifies the questions about the origin about the concept and the context and reasons for its development. The reference list of the Adult Manual has also been included to encourage further reading.

To Summarise: Reflective Functioning or 'mentalisation' is the active expression of the psychological capacity to organise experience of one's own or others' behaviour in terms of mental state constructs.

In other words, reflective functioning pertains to the dynamic process of experiencing oneself or others in terms of the psychological basis which underlie interactions or behaviour.

Reflective Functioning (RF) is inherently a dynamic skill used interpersonally to make meaning of behaviour and interactions. Theories of RF development point towards an interpersonal origin, arising from the interactions between infant and a caregiver who experiences him/her as a psychological being and thus attributes mental states to the infant and reflects this understanding back to the infant through verbal or behavioural interactions. Through these interactions, the infant develops the core psychological structure needed to build a viable sense of self. There is also some research evidence suggesting that the development of RF is facilitated under the pressure of sibling and peer interaction .

As such, basic RF involves the capacity to distinguish:

- ⇒ inner from outer reality;
- ⇒ pretend from 'real' modes of functioning;
- ⇒ intra-personal mental and emotional processes from interpersonal communications.

Furthermore, implicit to RF is the awareness of qualities of mental states such as:

- ⇒ opacity,
- ⇒ susceptibility to disguise,
- ⇒ limitations on insight,
- ⇒ the awareness of expectable psychological responses,
- ⇒ the defensive nature of certain mental states.

RF is a developmentally acquired and dynamic skill that builds upon the development of Theory of Mind. While it may be useful to conceptualise it as the process of Theorising of the Mind, it is important to recognise that it is quite different from intellectualisation with which it is often confused. Rather than it being a conscious deliberate cognitive process, we see RF as more like an overlearned skill like walking or driving a car, where you are not consciously thinking about doing. It is a process where the essential

components are non-conscious, although they may be called to consciousness. This recall to consciousness may involve some effort or may be accompanied by a sense of awe, and surprise at our usual unawareness of the processes involved in making sense of behaviour or interactions.

As such, RF entails an understanding that:

- mental states underlie one's own and others behaviour
- perceptions of behaviour or situations are dependent upon mental state attribution
- distortions of mental state attribution and perception of behaviour may occur and may be influenced by one's own mental state
- one's mental state may influence an individual's perception of self and other's perceptions of an individual..

## REFLECTIVE FUNCTIONING IN ADULTS

A characteristic of RF identified in the narratives of reflective adults is the recognition of developmental aspects of mental states, such as:

- ⇒ intergenerational and psychobiological developmental
- ⇒ unconscious factors which affect mental states.

Furthermore, RF functioning in adults may be manifested in the awareness of other potential factors which could influence psychological understanding, such as:

- ⇒ transactional processes between parent and child
- ⇒ awareness of family dynamics or social dynamics.

Such examples are rare in children, but are occasionally seen and would be rated highly.



## GENERAL GUIDELINES

1. Children of the 8-12 age range are actively developing cognitively, emotionally, and socially, and their narratives reflect this dynamic process. In contrast to adult reflective functioning, children's narratives may not be counted upon to be explicitly elaborate and coherent in the verbalization of the links between states of mind and one's own and other's behaviour.

E.g. "I think that she was angry because she thought that..."

Therefore for the purpose of this manual, statements which implicitly display a reflection on mental states are coded as potentially reflective statements provided that the actual mental state is explicitly stated. This may be manifested by such means as two statements in approximation to one another but pertaining to the same mental state or the need for prompt questions by the interviewer to help the child elaborate his or her answer.

E.g. Is there anyone you cannot get along with? "There is this one girl in my class who is always mean to me and saying mean and nasty things for no reason..."

Why do you think she is like that? "She likes to get attention and tries to get the attention of the Year 6 girls. She has two older brothers who ignore her and are quite mean to her, maybe it has something to do with that."

2. Dynamic or elaborate behavioural explanations or descriptions of personality, however accurate and perceptive they may seem, cannot be scored as instances of reflective functioning unless accompanied by specific references to mental states. Children may implicitly refer to a mental state through the animated acting out of a situation and using changes of intonation of voice and facial expression when relating what someone has said. In these instances, the child seems to be mimicking not only what one has said but also how they think the person felt, for example using an angry, sad, or sarcastic and hostile voice. In these instances the reference to a mental state is present but implicit and as such may qualify as a moderate to high RF statement providing there is additional evidence of thinking about the mental state implied.
3. There must be some demonstration of thinking about feelings or thoughts either explicitly or implicitly for a statement to qualify as moderately to highly reflective. Statements which simply refer to or report mental states are considered as examples of low reflective functioning. Those statements which do not refer to mental states at all are considered to be examples of absent reflective functioning.
4. Each demand question is coded based upon the highest RF response found in the reply. (See Appendix). The manual is designed for coding from videotaped interviews of children as the implicit references to mental states may be more difficult to ascertain using only transcriptions of interviews. However, we have found using transcriptions alongside rating from video, the most effective.

5. It is vital not to rate a child lower because they or their attitudes are unappealing. If their statements are reflective, they must be credited.

## PART 1

## REFLECTIVE FUNCTIONING IN INDIVIDUAL RESPONSES

Specific Areas of Reflective Functioning

## CATEGORIES:

## A. Awareness of qualities of mental states.

1. Recognition of the opaqueness of mental states and limitations on insight.
2. Mental states as susceptible to disguise
3. Mental states tied to expressions of appropriate normative judgements
4. Awareness of the defensive nature of certain mental states
5. Recognising the interactional aspects of mental states.

## B. The explicit effort to tease out mental states underlying behaviour.

- A. Attributions of mental states to other's or the child's own behaviour.
- B. Recognising that one's mental state may influence one's own behaviour and/or the behaviour of others.
- C. Recognising that one's mental states related to one situation may influence one's behaviour or feelings about another separate situation.
- D. Recognition of diverse perspectives.
- E. Understanding that an interpersonal behavioural interaction may be used to regulate negative affect.

## C. Recognizing that mental states develop in the context of developmental, psychobiological, and social processes.

1. Taking an intergenerational perspective, making links across generations
2. Taking a developmental perspective
3. Awareness of family dynamics or peer group dynamics
4. A freshness of recall and thinking about mental states.

## D. Mental states in relation to the interviewer

1. Acknowledging the separateness of minds and not assuming knowledge
2. Emotional attunement

## GUIDE TO RATING RF STATEMENTS

The utility of this manual is dependent upon the coders' knowledge of the following qualities of mentalisation and reflective functioning. These qualities must be elucidated from narrative passages to qualify as moderate to highly reflective statements.

NB: Statements fulfilling these criteria should be rated 5 and above.

### A. Awareness of qualities of mental states

#### OVERVIEW:

An awareness of distinct qualities of mental or psychological states as an example of reflective functioning. The understanding that mental states are different from behavioural or physical states is not enough, responses must show an understanding of at least one of the unique aspects of mental states as outlined below.

#### SUBCATEGORIES:

##### 1. Recognition of the opaqueness of mental states and limitations on insight.

The child acknowledges the difficulty one has in being sure of what the other's intention or mental state is or was, while being prepared to guess. Often these responses are characterized by the child's insight that there may be limitations in being able to understand our own and others mental states.

Other indications of opaqueness and limitations on insight may emerge through qualifiers such as "pretend he..." or "maybe he feels..." - prefacing an explanation in terms of mental states. Even more convincingly, alternative mental states may be offered, with the implication that it is hard to know which one lay behind the behaviour.

One limitation on insight that is rare, but notable, if seen in children's interviews, is the attribution of unconscious mental states as limiting factor for insight.

The statement must make clear that the child considers an active unconscious process working and not simply saying "he didn't know he was doing it" as a means of answering a question. In these instances where responses reflect an understanding of unconscious processes, a rating of 6 or above would apply.

EXAMPLES : Eg. How do you know if X is feeling sad or afraid? “Well, sometimes he looks really red and is quiet...I don’t really know sometimes if that’s because he is hot or something...but I tell him about a show to cheer him up but I don’t really know if he’s actually feeling sad or just not speaking or something.” (8)

## 2. Mental states as susceptible to disguise

The child’s response indicates awareness that internal states may be deliberately disguised. The response reflects awareness that one may experience different emotions to the one displayed.

EXAMPLES: I am so angry at her ... but I would never show that to her.”(6) [BASIC BUT CLEARLY IDENTIFIABLE RF RESPONSE]

## 3. Mental states tied to expressions of appropriate normative judgements

The child’s response may indicate an awareness of an expectable psychological response. When a response refers to what would be a commonly expected reaction in a specific situation, this is rated as evidence of reflective-functioning.

EXAMPLES: We went swimming and we didn’t know that the current was dangerous and my dad was so angry, he was looking for us because he was worried as he knew about the current. (8). [RICHNESS AND SOME INDICATION OF THE CAUSE OF THE MENTAL STATE. GOOD EXAMPLE OF OCCASION WHEN CHILD THOUGHT ANOTHER’S RESPONSE WAS APPROPRIATE]

## 4. Awareness of the defensive nature of certain mental states

A child’s response may reflect an understanding of people’s tendency to modify their mental states in order to reduce negative affect. This reflective understanding may be applied to the self and/or others.

EXAMPLES: No one really likes him and he is probably quite sad about that... so he does those mean things to stand up for himself...to feel better about himself. (8)

## 5. Recognising the interactional aspects of mental states

A child's response may show an understanding that mental states can interact with one another in a causal way. Responses can focus on:

1. How the mental state of one person may impact on the mental state of another. For example, this may be in the context of the feelings of one person affecting the feeling state of another,
2. The interactions of mental states within a single mind are considered. Common examples involve:
  - a. Responses show the child acknowledges conflicting perceptions/ desires or mixed emotions being held in mind
  - b. The child's responses may show one feeling leading to another in a causal sequence.
  - c. Some children may show some reconciliation of these and the capacity to have more than one feeling about an experience at the same time.

EXAMPLES: What happens when she gets upset with you? When she gets cross with me I usually feel upset and then when I think about it I feel guilty. (6)

What happens when she gets upset with you? When she gets upset with me she says, she says I'm about to lose my cool with you so you just better behave yourself (in angry voice and wagging finger). And if I'm going out, if I'm going out, she says to me, like, (in angry voice) "you're not going there anymore"...and then when I come upstairs and I go, "mum, please let me go and she says, "oh okay."

Why do you think she does it that way? To punish me...no not to punish me but to say, like, to teach me a lesson. But she's so kind and everything and she doesn't like hurting my feelings that she always ends up letting me go so I don't really worry.

[INTERACTIONS OF MENTAL STATES WITHIN MOTHER'S MIND]

And how do you feel when she's upset with you? I feel like I've been... sometimes when she's upset with me she just goes off and she doesn't say nothing, she just goes to her room and she just sits down. And then I know that I've made her really really angry, cause she won't say nothing and she just goes up and then I go say, "sorry, sorry, sorry" and then we make up again (8) [MENTAL STATE OF ONE IMPACTING ON MENTAL STATE OF ANOTHER; DEFENSIVE NATURE OF MENTAL STATES; MENTAL STATES ELICITING A MENTAL STATE REACTION AND BEHAVIOURAL RESPONSE IN ANOTHER]

- B. The explicit effort to tease out mental states underlying behaviour.

#### OVERVIEW:

The child's response identifies possible mental states that may account for behaviour, and offers accurate or plausible links between mental states and behaviours of the self and others. In contrast to the above category, these responses may have as their focus the behaviour with subsequent elaboration of mental states. This is evident in a range of statements illustrated below.

#### SUBCATEGORIES:

1. Attributions of mental states to other's or the child's own behaviour

All plausible causal accounts of behaviour in terms of mental states should be considered. The causal account should be regarding a specific incident and should clearly guide the rater coherently to an understanding of the behaviour based upon the mental state underlying it.

[NB: Less explicit accounts, where the rater must fill in the gaps to make the linkage between behaviour and mental state would only qualify for a rating of 4-5.]

EXAMPLES: Well I don't think she wanted to cry in front of her friends she didn't want to get embarrassed sort of, maybe... (6)

2. Recognising that one's mental state may influence one's own behaviour and/or the behaviour of others

The child's response shows a recognition of the role their own mental states might have had on their own behaviour or the behaviour of others. Implicit, but not necessarily explicit, is that the mental state would have had behavioural manifestations. This category is similar to A5- the interactional aspects of mental states however, here, the focus is on mental states impacting on behaviour.

EXAMPLES: My mom, she doesn't like me to, like, (said with emphasis) want things. Like, if I like go to a shop and I see something, she wouldn't like me to want it, so she likes to give me things so I have the opportunity to get things... so like an example is the other day when I was sitting in the kitchen talking with my mom and I said I want a new pair of trainers. And she said she could give me the money next week. She's quite good like that. (6) [CHILD'S MENTAL STATE OF WANTING ELICITS A BEHAVIOURAL RESPONSE FROM MOTHER]

3. Recognising that one's mental states related to one situation may influence one's behaviour or feelings about another separate situation

The child's response may indicate an understanding that the way one behaves in a situation may be affected by their feelings about another situation which may or may not be directly linked to the one at hand.

EXAMPLES: I was very angry as I thought he had done it on purpose and I felt I hated him...Thinking back now, why do you think the argument happened? ...I think I was angry and was too upset to listen to him explain....I was really in a bad mood as earlier a teacher had told me off and I was having a bad day." (8) [MENTAL STATES AND BEHAVIOUR IN ONE SITUATION AFFECTED BY THOSE FROM ANOTHER SITUATION, DIVERSE PERSPECTIVES, INTERACTIONAL ASPECTS OF MENTAL STATES WITHIN SELF.]

4. Recognition of different or diverse perspectives

The child's response reflects an understanding that different people may perceive a given behaviour or situation differently often based on differing knowledge of the situation or false belief.

EXAMPLES: She was upset because she thought the secret was about her but it wasn't. (6).

5. Understanding that an interpersonal behavioural interaction may be used to regulate negative affect



The child's response indicates an understanding that behavioural interactions with others may help to reduce painful or negative feelings. This type of response assumes an awareness of mental states underlying behaviour, the understanding that behavioural manifestations of affect may evoke and elicit emotional and behavioural responses in others, and that behavioural interactions of this sort are performed with the intention to soothe or regulate negative feelings or affect. [NB: As such, responses of this kind are deemed to be of higher reflective function and are scored 7 or above]

There are two main types of responses in this category:

1. The child may recognize that when they experience a negative affect, their own behaviour may elicit responses from others, which in turn can help to soothe or regulate the child's affect in various ways.
2. The child may recognize behaviours in others (parent or peer), which in turn prompts the child to seek to regulate or soothe the other.

The child's response must show this dynamic in the context of a specific situation or with specific description to the type of behavioural interaction and an explicit account of how it regulates negative affect. Thus general statements would not be rated as reflective. E.g. "When I get sad, she like, comforts me." (4).

EXAMPLES: What do you do when you're not feeling well like when you're feeling scared or upset? Well usually I just like want to be alone and um if it's something I can talk to someone about I'll talk to one of my friends. And then if you talk about ... pretend if you're scared that something is going to happen, like sometimes... I don't remember if that happened, I think it has but I don't remember why... umm, I talk to my friends. So does Claire usually know if you're feeling sad or afraid? Well she can tell because she's been around me for so long and then she'll ask me like why, is there something wrong. And sometimes I'll say like , 'Oh nothing' and then sometimes I'll tell her. Sometimes I just like, ..usually it helps me if I'm alone and then sometimes if I'm just like walking alone or something and then she'll ask me and then I'll tell her. (8) [BEHAVIOUR INTERACTION FOR REGULATION OF NEGATIVE AFFECT, MENTAL STATES AS SUSCEPTIBLE TO DISGUISE, PEER DYNAMICS, ELABORATION OF RESPONSE] Sometimes I just can't make her feel better... so instead of wasting ... or spending time thinking about it, I'll say why don't we go out and play. She's still feeling pretty bad but she won't be thinking about it as much. (8).

- C. Recognizing that mental states develop in the context of developmental, psychobiological, and social processes

#### OVERVIEW:

Though rarer in children of latency age, responses which make reference to developmental, psychobiological and social processes that can potentially affect aspects of mental states are considered to be demonstrative of reflective functioning. These include acknowledging the influence of one generation upon the next, showing an understanding of how mental states of others' change, showing an appreciation of family dynamics or peer dynamics, and distinguishing between the thinking of a young child and older child or person.

#### SUBCATEGORIES:

##### 1. Taking an intergenerational perspective, making links across generations

Although rarely found in interviews with children, statements showing awareness of this intergenerational exchange of ideas, feelings and behaviour is considered reflective as long as the references made are explicit and specific.

[NB: As such, responses of this kind are deemed to be of higher reflective function and are scored 7 or above]

EXAMPLES: Mom and dad had an argument, yeah... every time I said, "Shut up" they'd shout again and I'd say (louder voice) "Shut up!" And they wouldn't listen. So what did they do? They kept on arguing and they said "Tell her to shut up, tell him to shut up". So what ends up happening? Dad always usually sorts it out and stops it. So how do you feel when they argue? I feel upset but I feel, I feel upset but then I feel as I normally feel - happy. Yeah. Because I know it will always end up happy. There have been really no arguments that have gone on too far. So how do you think they feel when they argue? Angry, angry with each other. Yeah, they're shouting at each other. So why would they fight? I don't know. (Shaking head) Do they know how you feel about them fighting? Yeah because mum usually in our conversations she usually says stuff like "I know how you feel" because that happened with her mum and dad. Do you mean her mum and dad? Yeah. So you were able to talk about it. What about your dad, do you think he

knows how you feel? Yeah. Because my dad's mom had left him when he was 8 too and he'd know they wouldn't have split up without an argument. (9) [INTERGENERATIONAL PERSPECTIVE, FAMILY DYNAMICS, INTERACTIONAL ASPECTS OF MENTAL STATES, ELABORATION OF RESPONSE]

## 2. Taking a developmental perspective

Some children's responses show awareness of developmental changes in certain mental states. This is regarded as reflective because it assumes that the subject is making assessments of either their own or others' changing perspective with age.

EXAMPLES: My grandmother died when I was just a baby and I wasn't upset about it then. I wasn't sad about it 'til I was 8 years old ... since I saw that other kids had their grandparents around."(6) [SPECIFIC EXAMPLE OF RF USING DEVELOPMENTAL PERSPECTIVE BUT NOT ELABORATED]

Has anyone close to you ever died? Umm well when I was very little my granddad died because he was ill. Can you remember that? Yeah just about. Can you remember what happened? Well I can remember him laying in bed a lot and being ill um and the doctor had to come every day and check him but I can't remember much more. So was he ill for quite a while? Yeah he was. And did you go to the funeral? Uh, I don't think so I can't remember. How did you feel about it? I felt pretty upset but I didn't really understand then but I understand now and I still get a bit upset. (8) [DEVELOPMENTAL PERSPECTIVE, ELABORATION OF ANSWER]

## 3. Awareness of family dynamics or peer group dynamics

The child shows an awareness of the interdependence of mental states within family systems or peer group systems. Seeing the family or a peer group as an interdependent system, where the mental states of the individual members interact and create attitudes and feelings that each individual member is affected by indicates a high level of reflection. These examples are rare, but when present, are highly compelling. The description and explanation of mental states is placed in the context of a description of family or peer dynamics.

NB: These examples should be highly rated if seen - 7 or above.

EXAMPLES : Three words to describe your relationship with your dad. ...No communication because like I don't really talk to him... I do but, it's like we live in the same house but we're not... I mean it's not that bad but...it's not like a normal....It sounds like you can imagine it being better. Yeah I could, it was before, when I was little. Why do you think it changed? Don't know maybe because I've grown up, maybe because my mum started going to University and everything. That sounds like a lot of changes. Also she doesn't work anymore and my dad doesn't work anymore and my brother goes to Nursery and my dad has to pick them up almost everyday...How do you think it changed your relationship? I don't know. ...I don't know really...." (7) [IMPLIES AN AWARENESS OF FAMILY DYNAMICS].

I ask my Dad about things when he was growing up and things and when he passed his driving test or when he first learned to drive so...And he tells you about it? Sometimes he tells me, sometimes he says I'm too young to know about them and I'm too young to understand – he said that about 2 years go and I says 'what was it that you said that I didn't understand? And he said, "I can't remember". But I think that he can remember and but he, he still doesn't want to tell me. (8) [STRONG IMPLIED AWARENESS OF FAMILY DYNAMICS AND DEVELOPMENTAL PERSPECTIVE]

#### 4. A freshness of recall and thinking about mental states

A child's response may give the impression of thinking spontaneously and vividly about people's thoughts and feelings. This is the opposite of merely learned or clichéd expressions. There is a quality of something currently thought, and real to the subject, which makes it feel alive to the rater. This will often be conveyed, for instance, when a subject changes their perspective on an event or relationship during the interview itself, and is often marked by dysfluency, as the subject struggles to formulate a new understanding.

EXAMPLES: Can you give me an example of a time when she couldn't admit her mistakes? Well one of the times was like, if she was doing this, like we had to all draw I think it was some kind of a like a way of advertising and she knew she made a mistake and she would show and say (in a boastful voice) "Oh isn't this so good" and like we

would say, (tentative voice) “well like yeah it’s pretty good” and then she would say like, (accusatory voice) “Why is it pretty good?” And then we would say, well like you sort of made this little mistake and she would say like, (defensive tone of voice) “Oh no I didn’t.” Oh Okay. And how did you feel then? I felt like, like that she just doesn’t care that anyone like that anyone really thinks that she made a mistake and that she just doesn’t care that people are trying to help her. Oh, so that was the way you felt? Yeah. What do you think she was feeling when this happened? She might have felt a little badly of what she was saying but she kept going because she didn’t want to seem really silly like, ‘Oh I didn’t mean to say that’. Why do you think she’s like that? Umm..maybe there’s something happening in her family...and... because one of her really good friends is sort of like that, like if someone is sort of mean to her then she’s always mean back at them for the rest of the day and maybe she’s like sort of copying that a little. (9)

[FRESHNESS OF RECALL; FAMILY DYNAMICS AND PEER DYNAMICS; MENTAL STATES AS SUSCEPTIBLE TO DISGUISE; INTERACTIONAL ASPECTS OF MENTAL STATES; ELABORATION OF RESPONSE]

## **D. Mental states in relation to the interviewer**

### **OVERVIEW:**

A child's recognition of mental states might be shown by their interaction with the interviewer, which we take as an indication of the child's willingness to entertain mental states in the context of other relationships.

### **SUBCATEGORIES:**

#### **1. Acknowledging the separateness of minds and not assuming knowledge**

Explicit efforts by the subject to help the interviewer keep track of the material by stepping outside the narrative and spontaneously clarifying confusing aspects should be credited as an acknowledgement of a separateness of minds and knowledge. This is clear when a subject acknowledges ambiguities or anomalies in a narrative, and provides additional information which either clarifies or explains.

Less persuasive examples are when a speaker pauses to ask whether the interviewer is following the narrative.

This should only be the case, however, when, in the rater's view, the subject is accurately and selectively responding during particularly complex sections of the narrative.

Constant clarifications for the sake of the interviewer, may reflect a defensive style of narration rather than actual concern for the interviewer's level of knowledge.

**EXAMPLES:** "Have I got off the question?"(6).

#### **2. Emotional attunement**

Children's responses which make accurate references to the likely impact upon the interviewer of the material they have provided should also be credited. The rater must take care not to mistake common courtesy or a wish to please for such attunement. It is important that the subject should manifest an internal model or a hypothesis as to why the interviewer may be upset, bored, irritated, frustrated etc.

**EXAMPLES:** A child, in the midst of relating a complicated interaction about friends took a thoughtful pause and commented, "... this example could be complicated and confusing for you..." (10) [VERY UNUSUAL OBSERVATION FOR A CHILD]

## PART 2

GUIDELINES FOR RATING OVERALL REFLECTIVE FUNCTIONING OF  
PASSAGES

## Specific Guidelines for rating passages

We are now going to give examples of Reflective Functioning for the six major definitions of RF along with examples of what we are really looking for in higher functioning children - although in a lot of clinical children it is not found.

## 0 : Repudiated RF

Passages which are rated as negative or '0' must be distinctly anti-reflective or bizarre/inappropriate.

- Responses of this type are marked by active evasiveness of mentalising questions and probes with no effort or contemplation of the question. This may be shown through the child's lack of contemplation of the question i.e. immediately says "I don't know" or "No". The child may state they do not want to talk about the question or may perceive the question as an assault or perceived attack. Sometimes the subject may express overt hostility by criticising the interviewer or the task. Alternatively, these reactions may be non-verbal, for example: going totally silent.
- For some children, because they are frightened of being overwhelmed by powerful feelings, may be unable or unwilling to be reflective about family relationships but may be willing to be reflective in other circumstances, i.e. with peers.
- Some children might refuse to co-operate defensively but be willing to co-operate in other tasks, suggesting their unwillingness is related to defensive evasion of the emotional content of the task. On these occasions it is not possible to correctly assess their reflective functioning capabilities.



EXAMPLES : How did you feel about it? I felt sad. I can't speak about it anymore...is it over now – I can't answer anymore..."(0) [INTERVIEW ENDED AT THIS POINT AS CHILD REFUSED TO PARTICIPATE FURTHER]

What happens when Dad gets upset with you?

I said I don't want to do it...giving you words is enough. (0)

- More commonly, however, active evasion consists of trying to distract the interviewer from the task by, for example, starting a conversation on an irrelevant topic or disengaging from the task by engaging in any activity which precludes complying with the demands of the task.

EXAMPLES : The following examples came from one child's interview: So when was the last time... When was the last time I felt worried? Today really, Why was that? I looked at the sky and I thought that there would be a tornado I mean a hurricane or a tornado, I mean a hurricane or a tornado come down from the sky the sky. I went inside. I didn't want a hurricane or a tornado to suck me up. Are there other things that worry you? Do you want me to show you what my mum done on my shoe? Mum is best (pointing to shoe). (0)

When was the last time you felt it was fun to be with mom? Uhhh...there's a poem there, fun to be with mom...I'm fun to be with mum...I've got this video of Sesame street...." (0) [DOES NOT PROCEED TO ANSWER THE QUESTION]

Sad, Yeah, why would you feel sad? Because they played with me and then they said no. And why does that, why if they say no why does that make you feel sad? Cause they were my friends and I like them very much and they played with me. I think I'll have another biscuit."(1)

- Bizarre explanations of behaviour unequivocally invoke mental states in self or other which are beyond the bounds of common-sense psychology or even poorly-applied theory-driven insight. To be rated negative the passage must be impossible to understand without making the assumption of 'irrationality' on the part of the interviewee. Completely non-specific responses, overly concrete and literal interpretations of the questions, over-familiarity, gross assumptions about the interviewer on the part of the subject are examples.

EXAMPLES : Has there been a time when your parents were confusing or frightening?  
 Yes I have, when they died... no...my mummy and daddy are alive (dramatic and raising arms) THEY'RE ALIVE...my granny is dead.(0)

#### 1: Absent RF

The child is unable to give a response, although there is evidence that they have considered the question.

#### 2 - 3 : Absent but not repudiated reflective functioning response

The child's response preferentially makes use of physical or behavioural terms to describe themselves and others.

- Responses are framed in terms of external, physical circumstances - i.e. "I am 'x' years old...I play soccer" even when probed for qualities of personality.
- Conflicts and interactions are described with concrete and physical descriptions of what a person said or did and the child will be unable to elaborate about underlying mental states even with the aid of probing questions.
- Responses are distinctly non-reflective but not in a hostile or actively evasive way but rather leaves the interviewer with the impression that the child does not yet know how to use a capacity to understand mental states to further understand behaviour. The child may have difficulties understanding some questions which focus on mental states and do appear to make an effort to contemplate the question noted either by pausing or asking the interviewer such questions as "What do you mean?" yet even with probes the child is unable to provide a reflective response and may respond with "I don't know" answers.
- In the cases where simple one-word reports of mental states are offered with no elaboration even with prompts, a score of (3) would be warranted.

EXAMPLES: What happens when you are ill? I stay home from school and my mum stays with me and I stay in bed all day and my mum checks on me. (2)

Can you give me an example of when it felt kind to be with your mum? Yesterday because she took me and my cousin to the shop and we looked around, we didn't actually buy anything but we walked around and then she said we could go for tea and she took us there. (2) She's really fun, she's weird when she's fun. When we walk down the street she makes funny faces. (2) When I first met my dad, I had chicken pox. I was only 3 ...he brought a friend and I was shy because he brought me a present. (3) [ONE WORD REPORT OF MENTAL STATE - SHY]

#### 4 - 5: Questionable or low reflective functioning response

The passage may make use of mental state language and be more elaborated than responses rated (3), but there is an absence of material which would support the assumption that the child genuinely understands the implications of their statement.

- Even with the use of probes asking for explicit examples designed to elicit reflective psychological responses, the child is unable to elaborate reflectively on short reports of mental states.
- In general this rating would be given when the passage contains no evidence of:
  - a) awareness of the nature of mental states, b) an explicit effort to tease out mental states underlying behaviour, c) recognising the developmental, psychobiological, social and unconscious processes which may affect mental states, d) taking into account mental states in relation to the interviewer.

EXAMPLES : "When I get sad, she like, comforts me." (4) [BASIC DESCRIPTION OF MENTAL STATE OF CHILD AND RESPONSE OF PARENT]

This is a borderline category.

- The rater is uncertain whether the passage represents genuine RF or just a "canned" statement, produced in response to the interviewer's prompt but not underpinned by genuine reflective functioning. The rater should focus on whether the statement is 'obvious' and could be said simply as a 'manner of speaking'. If a statement is counter-intuitive in that context even though it is 'canned' a higher rating may be appropriate.

Factors, which, if present in a response, would suggest a rating of 5 to be more appropriate:

- Statements which are more elaborative but only imply an understanding of aforementioned categories of RF responses, and do so in an ill defined manner.
  - Usually this is noted as the interviewer must make a mental effort to fill in the gaps of narrative content in order to make linkages between the mental state content in the child's response and qualities of mental state, behaviour, developmental frame, or interactions with the interviewer.

EXAMPLES: ...at school I was kind of rude most of the time but because I'm out of that school now I'm happy because it was, kind of, the company I was around. (5) Do your parents sometimes argue? Not very often. They did have a big argument and I was worried but it got solved. Feel anything else but worried? I felt a bit scared that they might... I asked what happened and how the argument broke out. He didn't tell me but I think I know why...Well um – I don't really understand it...it's not that I don't really want to talk about it. They were shouting at each other because, I mean, it was really me and my sister being a bit tactful cause my sister said there's a lady in our school and she weighs a certain amount and she wants to lose weight but it was actually a perfect weight for a lady like that and um and I said why would she want to lose weight cause that's such a good weight and then my mum said go upstairs to me and my sister and I didn't really understand. Umm but it was actually me and my sister being a bit tactful because my mum is a bit overweight and my mum got angry with my dad and they used to share a bedroom but now they've got separate bedrooms. (5) Well, my mum and dad had a court case that she can have enough money to buy a house. How does that show how it is a loving relationship? She kept listening to me and what I wanted her to say in court. She stood up for us and she used to order – she exaggerated some of the things we said so she would win. (5)

I think because I really wanted to know if I got in and I wanted to know like (changes voice) I might get in and then when I didn't I was sort of sad and stuff. And so how does that connect with you and Claire? Because Claire was sort of like being happy and it was like (changes voice) 'Oh I wish I got in' and stuff. (5)

The passage must fall under one of the following categories:

- a. Awareness of the nature of mental states;
  - b. An explicit effort to tease out mental states underlying behaviour,
  - c. Recognising the developmental, psychobiological, social and unconscious processes which may affect mental states,
  - d. Taking into account mental states in relation to the interviewer - either the nature of mental states, how mental states relate to behaviour, the properties of mental states or mental states in relation to the interviewer.
- Even if the mental state is fairly simple, if it is described clearly and briefly reflected on in a genuine and not 'canned' manner, this rating is appropriate.
  - Other than being explicit, the statement does not need to reflect sophistication. Although the statement should not be a cliché, it may be fairly ordinary, not reflecting particular insights or sensitivities. Normally the passage fits fairly well under one of the categories listed under the examples of moderate to high reflective function given in the previous section.
  - If the passage contains a number of the features within a category the rater should consider giving the passage a higher rating (7), unless it is also flawed in an important way (e.g. over-analytical style, incoherent answer).

EXAMPLES : I feel close to him and happy when I'm with him because I don't really get to see him a lot. At least I get to see him on Saturdays. So do you miss him? Mmm, a lot.  
 (6) He might have been a bit angry at me because he might have thought I was accusing him of something he didn't say and... maybe... he might be thinking that maybe he did say it or something.(6) How did you feel when she shouted at you like that? Upset. Why did you feel upset?

She can shout pretty loud but she can make it go right into you and it's like somebody smacking you around on the inside. How do you think your mom feels when that happens? She feels upset for doing it... Why do you think she feels like that? She loves me so much she don't want to shout at me but she has to. So why do you think she has to? Because I've done something wrong and she's got to discipline, because I wasn't that disciplined back then...(6)

Three words to describe you relationship with your dad. It's very bad, I really think it is bad. We do talk and everything, but we don't really get along. Sometimes we do, sometimes we don't ... And like sometimes we really scream and shout but sometimes we get along okay. So a word to describe it is not very good, unbalanced... (6)

Can you tell me of a time when you felt funny? What funny strange or funny ha-ha... Funny ha ha. You used the word funny to describe yourself. Sometimes when I make jokes or something and I tell people jokes that I think they probably know and they think it's sort of funny and I don't think it's that funny...I told a joke to my dad's friend and he laughed and my dad laughed ...he heard it before...but I just smiled. I didn't think it was that funny, when I first heard it, it was funny. (6)

Is Claire able to help you to feel better? Sometimes, like if you're talking to someone it's sort of like well why am I afraid of that, you sort of feel like it's not a big a deal as you think it is. How does that happen? I don't know it's just like...I'm telling Claire then it must not be a big deal...cause if Claire isn't going 'Oh my gosh' then it's not a big deal. (6)

#### 8 - 9 : Marked reflective functioning response

Passages rated '8' are usually broader than those rated '6' but essentially they meet similar criteria. These passages may be rated higher for one of the following reasons:

- 1) The passage may contain a sophisticated statement concerning mental states. Here the rater is looking for passages readily classifiable as being reflective. The statement owes its 'obviously' reflective nature to combining several features of mentalising such as awareness of the limitations of knowledge of another's mental states, as well as indicating a recognition that individual perspectives on the same objective event may differ.

EXAMPLES: How do you feel when your dad gets upset with you? I can't decide, he is grumpy, next I feel upset, next I feel like he must be playing a joke or something because sometimes he, like, plays jokes on me and pretends to be angry with me but he's not really angry at me. And how does that make you feel when he pretends to be angry with you? Weird, because I can kind of tell when he's angry like that because he makes it more, he exaggerates it more than how he normally does it. (8) [QUALITIES OF MENTAL STATES, DIVERSE PERSPECTIVES, FAMILY DYNAMICS]

- 2) The passage may be 'marked' in reflective-functioning because the view of mental states presented by the subject is unusual and surprising to the rater. Passages which cast an original perspective, which nevertheless is readily understandable to the rater, reflect mentalization on the part of the subject. Raters should however be aware of the possibility of "borrowed" reflective-functioning, where the subject is repeating ideas presented to him/her in other contexts (family legends, therapeutic consultations, etc.). In such instances a rating of '4' would probably be more appropriate.

EXAMPLES : Can you tell me about a time when it felt caring with your mom? Like when I was in hospital, she wouldn't stop, she kept on coming to see me. And when was that? When I was 8 years old. Right. She wouldn't stop seeing me and like when it was the end of visiting hours she had to leave and she she burst into tears. She even wanted, she even told the doctors that she wanted to stay there with me ...night and day. Really. Yes it was that good Like my dad, he wouldn't stop coming either. Because they were too worried about me. Like they were too worried that if I had an operation and it went wrong that they'd stay there all night, they'd stay there and watch the operation and see if it went well and if it went wrong they'd just rush out of there, they wouldn't care about security, they'd just rush out of there to see what happened. (8)

- 3) The passage may be complex or elaborate in that the mental state of the self or the other is described in unusual detail. Raters should look out for the presentation of complex, multi-layered mental states, conflicts, mixed emotions, false beliefs and the like.

EXAMPLES : Can you give me an example of a time when X made a mistake and annoyed you? Well one of the times was like, if she was doing this, like we had to all draw I think it was some kind of a like a way of advertising and she knew she made a mistake and she would show and say 'Oh isn't this so good' and like we would say, 'well like yeah it's pretty good' and then she would say like, 'Why is it pretty good?' And then we would say well like you sort of made this little mistake and she would say like, "Oh no I didn't." Oh Okay...and how did you feel then? I felt like like like that she just doesn't care that anyone like that anyone really thinks that she made a mistake and that she just doesn't care that people are trying to help her... Oh, so that was the way you felt? Yeah. What do you think she was feeling when this happened? She might have felt a

little badly of what she was saying but she kept going because she didn't want to seem really silly like, 'Oh I didn't mean to say that'. Why do you think she's like that? Umm... maybe there's something happening in her family...and because one of her really good friends is sort of like that, like if someone is sort of mean to her then she's always mean back at them for the rest of the day and maybe she's like sort of copying that a little. (9)

- 4) A rating of at least '8' should be given to passages where mental states are spontaneously placed within a causal sequence. By this we mean that the subject considers (a) how the mental states arose (what perceptions of reality lead to the belief or desire assumed), (b) how the mental state influenced behaviour and (c) what impact or implication the mental state has subsequent perceptions, beliefs and desires. The response must be forwarded prior to the use of probes or subsequent questions in a question cluster which have been specifically designed to elicit responses of this nature.

EXAMPLES : When have you felt it was annoying to be with your mum? It was when umm... a whole pack of cheese strings was gone which is these... I know what they are the snack, yeah, yeah like a long thing like a long wiggly worm...a fat one. And... umm, and she looked in the fridge and it was some kind of food and my mom I think it was.. .and she said...she said ( in angry voice) "Stephan, you've eaten all"- of whatever it was, all of the whatever it was and she said oh it was a ten pack and, "I mean, how could you eat it in three days" and I was like, I said, "but mom" and she said , "no buts, go up to your room". And she was really angry at me because I had eaten... uh.... and I didn't even know what she was talking about. And later I said, "Mom, I did not do it." And I felt really angry with her and fed up ...and umm... and it turned out to be it had been my sister's fault and she had blamed me for something that I didn't do. Right, so how was it resolved, how did you sort it out? Well when she found out she said, "Listen Stephan, I'm really sorry I made a mistake." (8)

- 5) If a subject acknowledges a particularly difficult situation, with the thoughts or feelings appropriate to that, then credit is given for the subject's willingness to accept experiences rather than defend against them, avoid justifying the behaviour of significant others, especially family members, who hurt him or her, etc.



EXAMPLES : How did you feel when he gets cross with you? Scared. Why do you feel scared? Because he might hit me but he promised never to hit me again. Yeah on one occasion that was when I was about 4, I didn't like to lose games and so when we were playing football I started crying because I was losing and he was making jokes and I was putting him off and he slapped me and shouted at me and then he kicked me in my ribs and I fell and I burst out in tears. Did it hurt a lot? I was in bruises... and I said if he does that once more that I had to call the police because you're not supposed to do that to a child. Mmm. So he only did it once? Yeah. So now do you feel scared that he might do it again? Ah, I don't really know if I feel scared because if he does... I think He's scared because I will call the police. (9)

#### 10 : Full / Exceptional RF

The same reasons which may lead a rater to assign a (8) rating may lead him/her to consider awarding an "exceptional" score.

- The difference lies in the amount of sophistication shown, the degree of complexity presented, the completeness of the causal account, the degree of 'surprise' the rater experiences at the subject's understanding, the intricacy of the interaction between mental states offered etc. For a rating of '10' the passage must be unusual in at least one of these respects.
- A further circumstance which might justify the award of this rating even to passages which would normally be rated (8) is the context in which the passage appears. If the rater sees the part of the narrative as particularly emotionally charged and difficult for the subject then showing even marked levels of mental state understanding may be considered "exceptional".
- Examples might include the understanding of rejection, neglect or abuse by the caregiver or peer, or understanding feelings of current anger or resentment from or toward the attachment figure or peer. The rater should note that the presence of mentalising may give the impression that the experience recounted was not exceptionally difficult. To circumvent this the rater should take an "objective" (almost sociological) view of the difficulty involved in the experience for that person and adjust ratings accordingly. For example rejection by one parent may

not be quite so difficult for someone who appears to be assured of the love and commitment of the other parental figure. By contrast, an individual whose history reveals no such ameliorating factor might be more readily credited with an “exceptional” rating if the understanding they show of the experience of rejection meets the criteria for “marked” RF, even if the understanding does not come across as hard-won.

- The most common justification for an “exceptional” rating is the apparent awareness of the subject of important aspects of the mental states of all protagonists within an interaction, where the protagonists are placed in relation to one another in terms of their feelings and beliefs and these are sufficiently complex and elaborate for the rater to be persuaded of their accuracy. The subject offering such a “full” picture may not be exceptionally insightful, although the passage must contain sufficient “surprise” and coherence for the rater to feel it is unlikely to have come from contaminating sources (e.g. regurgitation of a therapist’s or parent’s view). The passage should therefore have a personal character, i.e., experienced as personally significant and meaningful, and may seem to be developing further during the interview itself.
- Examples where children reflect on the process of the interview in a surprisingly insightful way would rate a ‘10’. For example, concern that the narrative may be confusing for the interviewer, as seen in the example on page 19.

EXAMPLES : Can you give me an example of when it felt close to be with Claire? Well, if she gets hurt or something, like, I really care. It’s not like I’m going to say, oh she just got hurt, she can take care of herself and stuff. Can you tell me about a time when that has happened? Well I think also one of the times, once when we were skipping, she fell and scraped her knee and she just like walked off and some people didn’t notice and I went after her...one of us took her in to the office to get some ice and I said Are you okay, do you need a teacher? What was it like for you? I didn’t know what to do exactly, I knew I should go but like, it was like ..is she really hurt? Did anything really happen? What was it like for Claire? Well I don’t think she wanted to cry in front of her friends she didn’t want to get embarrassed sort of, maybe... that’s what I felt like. (10)

Why do you think he is like that? Well because he just likes bugging everybody and like he just bugs everybody for fun and if anyone bugs him he gets all stiff and angry about it.

And like that's the way he's always been really but now he's sort of changing ... Now he's changing? Now like he sort of makes it out into a joke if anyone bugs him so now it usually doesn't happen.

Well like everyone, sometimes people didn't like it and then they wouldn't be his friend a little bit and then I think it's because he saw that people really didn't like when he did that so he probably changed because of that. (10) [SURPRISING, INSIGHTFUL; MENTAL STATES AS SUBJECT TO CHANGE, PEOPLE CAN CHANGE THE WAY THEY DEAL WITH MENTAL STATES]

## Summary of Reflective Functioning Scale for Individual Responses

Rating	Description
0	<ul style="list-style-type: none"> <li>▪ Response marked by active evasion of mentalising and no effort to contemplate the question.</li> <li>▪ Evasion may be shown through hostile criticism of the interview or interviewer, behavioural or verbal efforts to distract the interviewer, or non-verbal measures such as becoming completely silent.</li> <li>▪ Bizarre explanations of behaviour and mental states would also fall under this category and are considered a type of active evasion of reflective functioning.</li> </ul>
1	<ul style="list-style-type: none"> <li>▪ Child unable to give an adjective or example – there has to be some evidence that they tried to think of a word or example</li> <li>▪ There is no evidence of active evasion, and no hostility, for example, the child may contemplate the question and then respond by saying ‘I don't know’ or ‘I can not think of any other example’</li> </ul>
2	<ul style="list-style-type: none"> <li>▪ Response preferentially makes use of physical or behavioural terms to describe mental states.</li> <li>▪ No evidence of active evasion.</li> </ul>
5	<ul style="list-style-type: none"> <li>▪ Response includes references to mental states but with limited elaboration of the response.</li> <li>▪ Alternatively, an elaboration of the response only approximates a clear RF type and the rater must ‘fill in the gaps’ in the child's response in order to clearly define the response as an RF response type.</li> </ul>
6	<ul style="list-style-type: none"> <li>▪ Response may be clearly identified as one of the RF response types.</li> <li>▪ The response may be fairly simple and unsophisticated, but must be described clearly and briefly reflected upon.</li> <li>▪ Responses denoting more than one quality of an RF category would be rated higher.</li> </ul>
9	<ul style="list-style-type: none"> <li>▪ The response is clearly identified as one of the RF response types.</li> <li>▪ The response is more descriptive and elaborated such that the passage likely includes: <ul style="list-style-type: none"> <li>○ more than one type of RF category,</li> <li>○ a surprising or unusual view of a mental state which is not bizarre,</li> <li>○ an account of complex multi-layered mental states, or</li> <li>○ an account where mental states are placed within a causal sequence.</li> </ul> </li> </ul>

10

- The response clearly rates a '7' and is more sophisticated in description and elaboration either:
  - in the degree of complexity presented,
  - the completeness of the causal account,
  - the account of mental states of all the protagonists within an interaction,
  - the degree of surprise the rater experiences at the subject's understanding, or
  - the intricacy of the interaction between mental states presented.
- The response may be of an emotionally charged or difficult subject, which the child nonetheless relates and is able to reflect upon in an elaborative and descriptive RF response.

NB: The rater can use discretion if they feel that the child falls between 2 scales and rate as a 4 or an 8, for example.

## PART 3

## SCORING, CODING SHEETS, INTERVIEW SCRIPT and RELIABILITY EXAMPLES

Interviews are coded from videotape.

Only delineate questions are coded:

## THE CHILD ATTACHMENT INTERVIEW

1. Questions 2a – 7 and question 13 on the Interview Script are to be coded in all cases.
2. In those cases where the child never had a relationship with a parent, and is therefore unable to answer related questions, rate as '100'.
3. Questions are coded as 777 if the absence of an answer is due to the interviewer having failed to answer the question.
4. Questions 8, 9, 10/11, and 14 are to be examined and if RF is found which is rated 5 or above, these scores are to be entered on the score sheet in the lower box.
5. On occasions, questions 15 (Do you ever feel your parents don't love you) and 16 (Have you ever been hit by a member of your family) are asked. These questions may be numbered differently depending on the version of interview script used.
6. RF scores for questions 2a – 7 + 13 are to be entered onto the scoring profile graph.

NB. THE NUMBERING OF THE QUESTIONS MAY BE DIFFERENT DEPENDING ON THE INTERVIEW SCRIPT. IT IS IMPORTANT TO RATE THE CORRECT QUESTIONS.

## CODING RF FROM THE CHILD ATTACHMENT INTERVIEW

QUESTION	DESCRIPTION	
Q2 (not coded)	Three words to describe yourself	
Q2a	Give example - First word	IF CHILD GIVES TWO EXAMPLES BUT FAILS TO FIND A THIRD, SCORE MISSING EXAMPLE AS '100' - NOT SCORED
Q2b	Give example - Second word	
Q2c	Give example - Third word	
Q3 (not coded)	Three words to describe what it's like to be with Mum	
Q3a	Give example - First word	IF CHILD GIVES TWO EXAMPLES BUT FAILS TO FIND A THIRD, SCORE MISSING EXAMPLE AS '100' - NOT SCORED
Q3b	Give example - Second word	
Q3c	Give example - Third word	
Q4	What happens when Mum gets upset with you?	
Q5	Three words to describe what it's like to be with Dad	
Q5a	Give example - First word	IF CHILD GIVES TWO EXAMPLES BUT FAILS TO FIND A THIRD, SCORE MISSING EXAMPLE AS '100' - NOT SCORED
Q5b	Give example - Second word	
Q5c	Give example - Third word	
Q6	What happens when Dad gets upset with you?	
Q7	Can you tell me about a time when you were upset and wanted help?	
Q13	Do your parents sometimes argue?  IF CHILD DOES NOT HAVE AN EXAMPLE, SCORE AS '100' - NOT SCORED	

## Extra Questions

Q8	What happens when you're ill?	IF CHILD DOES NOT HAVE EXAMPLES FOR THESE CATEGORIES, LEAVE BLANK ON THE SCORING SHEET.
Q9	What happens when you hurt yourself?	
Q10/11	Has anyone close to you ever died? Has an animal ever died?	
Q12	Have you ever been away from your parents for the night or for longer than a day?	
Q14	What kind of Dad/Mum would you like to be?	
Q15	Do you ever feel that your parents really don't love you?	IF THE CHILD GIVES AN EXAMPLE BUT IT IS NOT CONSIDERED DEFINITE RF (I.E. UNDER 5) LEAVE BLANK ON THE ANSWER SHEET.
Q16	Have you ever been hit by a grown up in your family?	



## Overall Child Reflective Functioning Rating Profiles

Overall Rating	PROFILE
0 = Reduplicated RF	<ul style="list-style-type: none"> <li>▪ The interview is marked by persistent anti-reflective examples of active evasiveness to questions and subsequent prompts to mentalise - or</li> <li>▪ The interview is marked by hostile resistance to answering questions shown by lack of contemplation of questions and outright refusal to answer.</li> <li>▪ Bizarre or inappropriate responses to questions may be present.</li> <li>▪ Majority of responses have been rated 0 or 1, with no responses rated above 3.</li> </ul>
1-2 = Absent RF (New 2-3)	<ul style="list-style-type: none"> <li>▪ The interview is predominated by physical and behavioural descriptions.</li> <li>▪ When mental states are mentioned they are simply reported with little spontaneous elaboration unless prompted and the elaboration remains on a physical descriptive level.</li> <li>▪ Non-responsive answers are not accompanied by hostility or evasion and the child presents some effort to respond to questions.</li> <li>▪ Majority of responses fall in the range of 0 - 3.</li> <li>▪ Responses rated '0' may be present but are balanced out by ratings of 3 or above.</li> </ul>
3-4 = Low RF (New 4-5)	<ul style="list-style-type: none"> <li>▪ The interview includes several examples of spontaneous mental state reports and simple elaboration of mental state responses, often using other adjectives of similar valence in further elaboration of an example</li> <li>▪ Clear evidence that the child can independently reflect on the underlying factors relating to the mental state is lacking.</li> <li>▪ The majority of responses fall within the 3 - 4 range.</li> <li>▪ Alternatively, the interview may contain a wide range of RF response ratings from 2 - 8, suggesting that the child's reflective functioning is not yet firmly established as the primary mode of understanding experience.</li> <li>▪ There may be several responses rated 2, which are balanced out by responses rated 6 or above.</li> </ul>
5-6 = Definite RF (New 6-7)	<ul style="list-style-type: none"> <li>▪ The interview includes clear examples of reflective functioning rated 6 and above.</li> <li>▪ The capacity to reflect and elaborate independently on the underlying factors relating to mental states is present, however the child often needs the encouragement to do so.</li> <li>▪ RF responses rated 6 and above likely fall under the categories of qualities of mental states or teasing out mental states underlying behaviour.</li> <li>▪ The range of responses is likely broad with a few</li> </ul>

	<p>responses rating below 4, which are balanced out by responses rated 7 and above.</p> <ul style="list-style-type: none"> <li>▪ The majority of responses are rated 4 – 7.</li> </ul>
7-8 = High RF (New 8-9)	<ul style="list-style-type: none"> <li>▪ The interview contains several examples of definite reflective functioning rated 6 and above.</li> <li>▪ Descriptions and responses consistently make use of mental state language and elaboration of mental states.</li> <li>▪ The child shows an ability to independently psychologically reflect on mental states with responses often starting out at a 6 rating.</li> <li>▪ The child is more likely to take into account developmental and dynamic factors influencing mental states and behaviours. This is reflected in the contextualisation of responses with descriptions often being presented with the family and peer group dynamics taken into account.</li> <li>▪ Interviews in the top level of this rating will have no responses rated '0' and no more than two responses rated '3' or below.*</li> </ul>
9 = Exceptional RF (new 10)	<ul style="list-style-type: none"> <li>▪ The interview presents an exceptional ability to reflect on mental states even when relating difficult events or feelings.</li> <li>▪ Responses are spontaneously elaborated and coherent.</li> <li>▪ The child assumes a reflective stance, which dominates the child's understanding of experience.</li> <li>▪ There is an impression of the child actively reflecting on his or her responses during the interview which is noted by a freshness of recall and spontaneous consideration of varying perspectives, including the interviewer's.</li> <li>▪ There are likely no individual ratings of 4 or below.</li> <li>▪ The majority of responses are rated 6 and above.</li> <li>▪ Prompts do not greatly enhance response ratings.</li> </ul>

**APPENDIX D3****CHILD REFLECTIVE FUNCTIONING SCALE – SCORE SHEET**

## CHILD REFLECTIVE FUNCTIONING SCALE – Score Sheet

<b>ID:</b>	<b>AGE:</b> <b>Y</b> <b>M</b>
Using CHILD ATTACHMENT INTERVIEW	<b>SEX:</b> <b>M</b> <b>F</b>

?	Details	RFS	Comment
q2	Describe Self		
q2a	Self 1		
q2b	Self 2		
q2c	Self 3		
q3	Describe Mum		
q3a	Mum 1		
q3b	Mum 2		
q3c	Mum 3		
q4	Mum upset/cross		
q5	Describe Dad		
q5a	Dad 1		
q5b	Dad 2		
q5c	Dad 3		
q6	Dad upset/cross		
q7	Self upset		
q13	Parents argue		

**Note: Code 777 for Question not asked; 100 for Question not answered because of non-occurrence**

**APPENDIX E1**  
**SUMMARY OF FINDINGS**

*Test-Retest Reliability of the HSS, AT and CRFS (based on Pearson's Correlations)*

	<i>HSS</i>	<i>AT</i> <i>Accuracy</i>	<i>AT</i> <i>Justification</i>	<i>CRF</i> <i>Self</i>	<i>CRF</i> <i>Other</i>
<i>3 Months</i>	.40	.50	.61	.67	.86
<i>1 Year</i>	.59	.52	.44	.59	.63

*Family Composition Factors associated with Higher Test Scores (based on t-tests)*

<i>HSS</i>	<i>AT</i> <i>Accuracy</i>	<i>AT</i> <i>Justification</i>	<i>CRF</i> <i>Self</i>	<i>CRF</i> <i>Other</i>
<i>Children of Single Parents</i>	--	--	<i>Children of Single Parents</i>	--
<i>Children with Siblings</i>	--	<i>Children with Siblings</i>	--	--
--	--	--	<i>Children with Caregivers without Formal Employment</i>	--

*Relationship between HSS, AT and CRFS performance and Age, IQ and Language Abilities (using Pearson's Correlations)*

	<i>HSS</i>	<i>AT</i> <i>Accuracy</i>	<i>AT</i> <i>Justification</i>	<i>CRF</i> <i>Self</i>	<i>CRF</i> <i>Other</i>
<i>Age</i>	.38	.45	.53	.18	.21
<i>Verbal IQ</i>	.42	.40	.29	.24	.18
<i>Exp Language</i>	.40	.19	.12	.28	.37

*Contribution of Age, IQ, Attachment and Psychopathology to the Prediction of HSS, AT and CRFS performance (based on regression analyses)*

	<i>HSS</i>	<i>AT Accuracy</i>	<i>AT Justification</i>	<i>CRF Self</i>	<i>CRF Other</i>
<i>Age</i>	18%	20%	28%	significant (based on AMOS)	significant (based on AMOS)
<i>IQ</i>	12%	12%	5%	--	--
<i>CAI</i>	5%	8%	--	--	--
<i>CAFAS</i>	--	6%	--	--	--
<i>CBCL</i>	--	--	--	--	--

*Differences in Attachment Security: Variance explained by Performance on the HSS, AT and CRFS (based on ANCOVA with Age and IQ as co-variables, and attachment security on the CAI as the independent variable)*

	<i>HSS</i>	<i>AT Justification</i>	<i>CRF Self</i>	<i>CRF Other</i>
<i>CAI (secure/insecure)</i>	7%	7%	15%	14%

*Relationship between children's performance on the HSS, AT and CRFS ( using Pearson's Correlations)*

	<i>AT Accuracy</i>	<i>AT Justification</i>	<i>CRF Self</i>	<i>CRF Other</i>
<i>HSS</i>	.47	.54	.36	.33
<i>AT Accuracy</i>		.49	.30	.36
<i>AT Justification</i>			.40	.41
<i>CRFS Self</i>				.59